



PENTAGON RENOVATION PROGRAM

MARCH 7, 2002

WALKER LEE EVEY
PROGRAM MANAGER



Wedge 1
E-ring
to
Wedge 2
C-ring

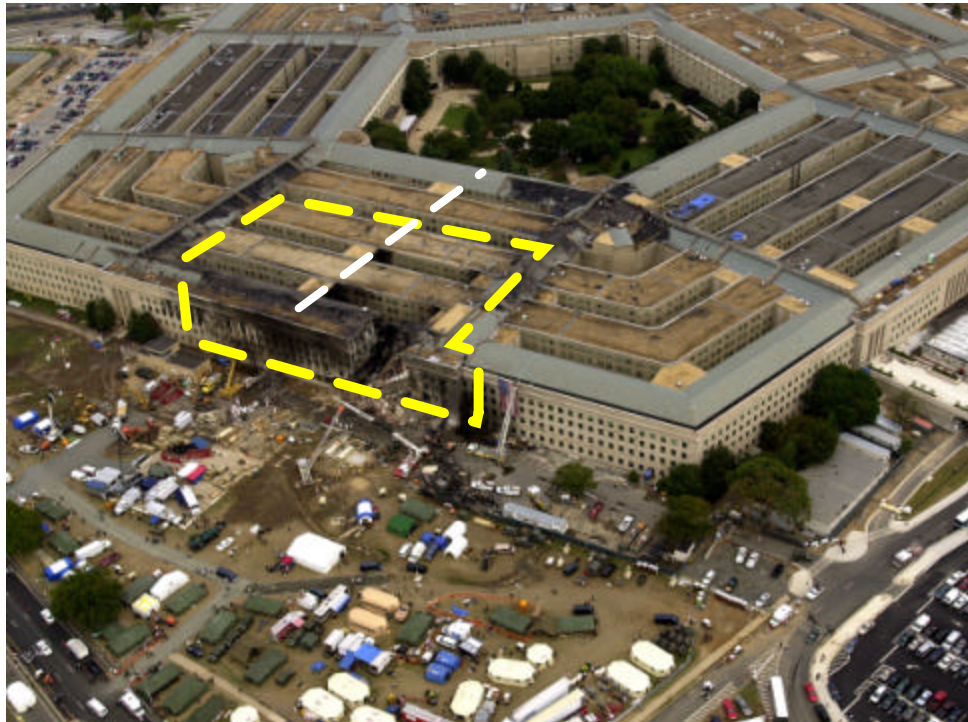
9/11



THE PHOENIX PROJECT

- 400,000 square feet
- The outer three rings (E, D, & C)
- Between Corridors 4 & 5
- All 5 floors

Note: Wedge 1 side = core & shell,
Wedge 2 side = shell only



Stabilize
Analyze
Demolish
Rebuild





Temporary columns were erected to provide support where the original columns had been demolished.

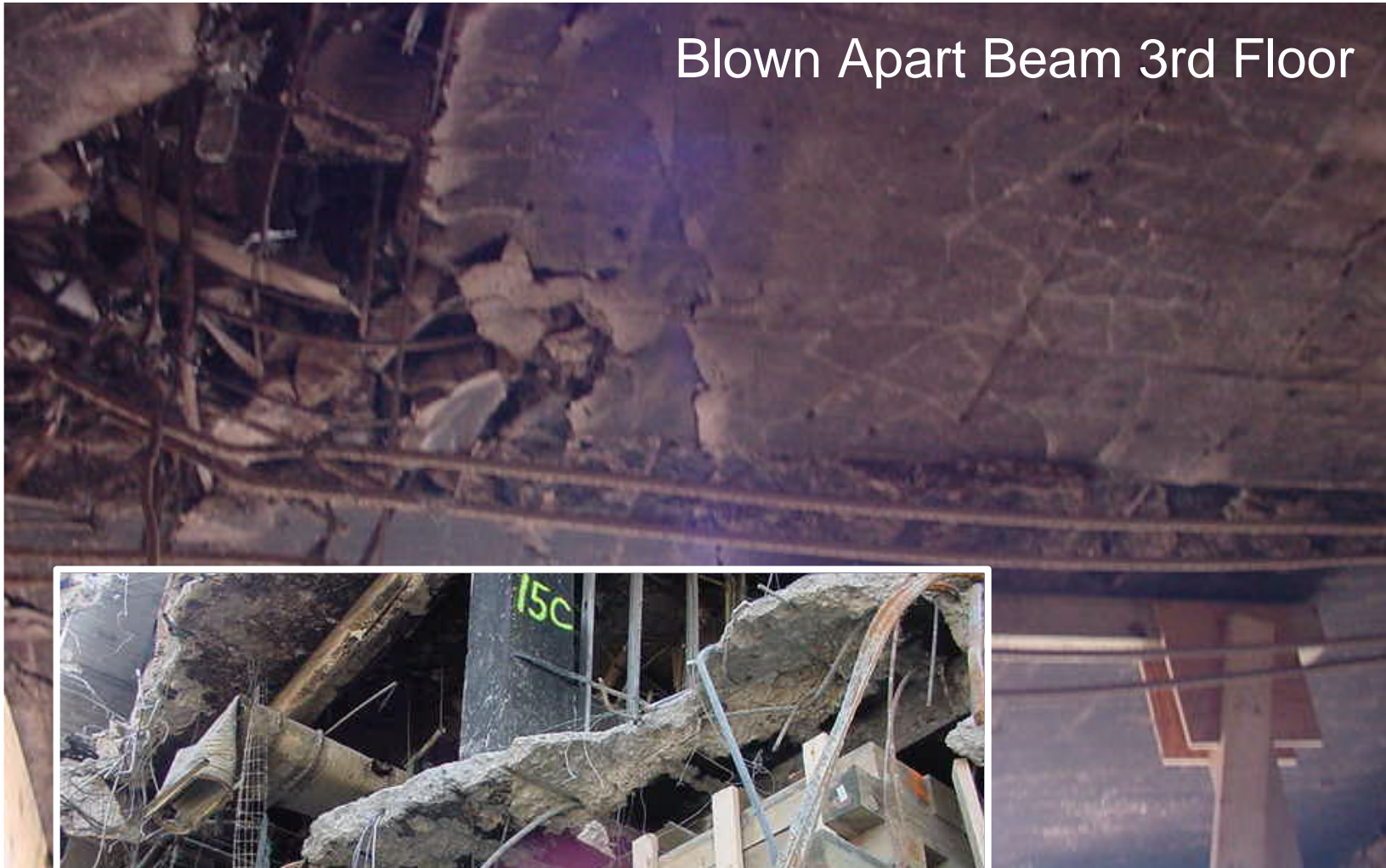
Stabilize
Analyze
Demolish
Rebuild





Stabilize
Analyze
Demolish
Rebuild

Blown Apart Beam 3rd Floor



Looking Up At
Collapsed Area.
Note Missing
Columns





**10,000 tons of debris
removed in first few weeks**

Stabilize
Analyze
Demolish
Rebuild

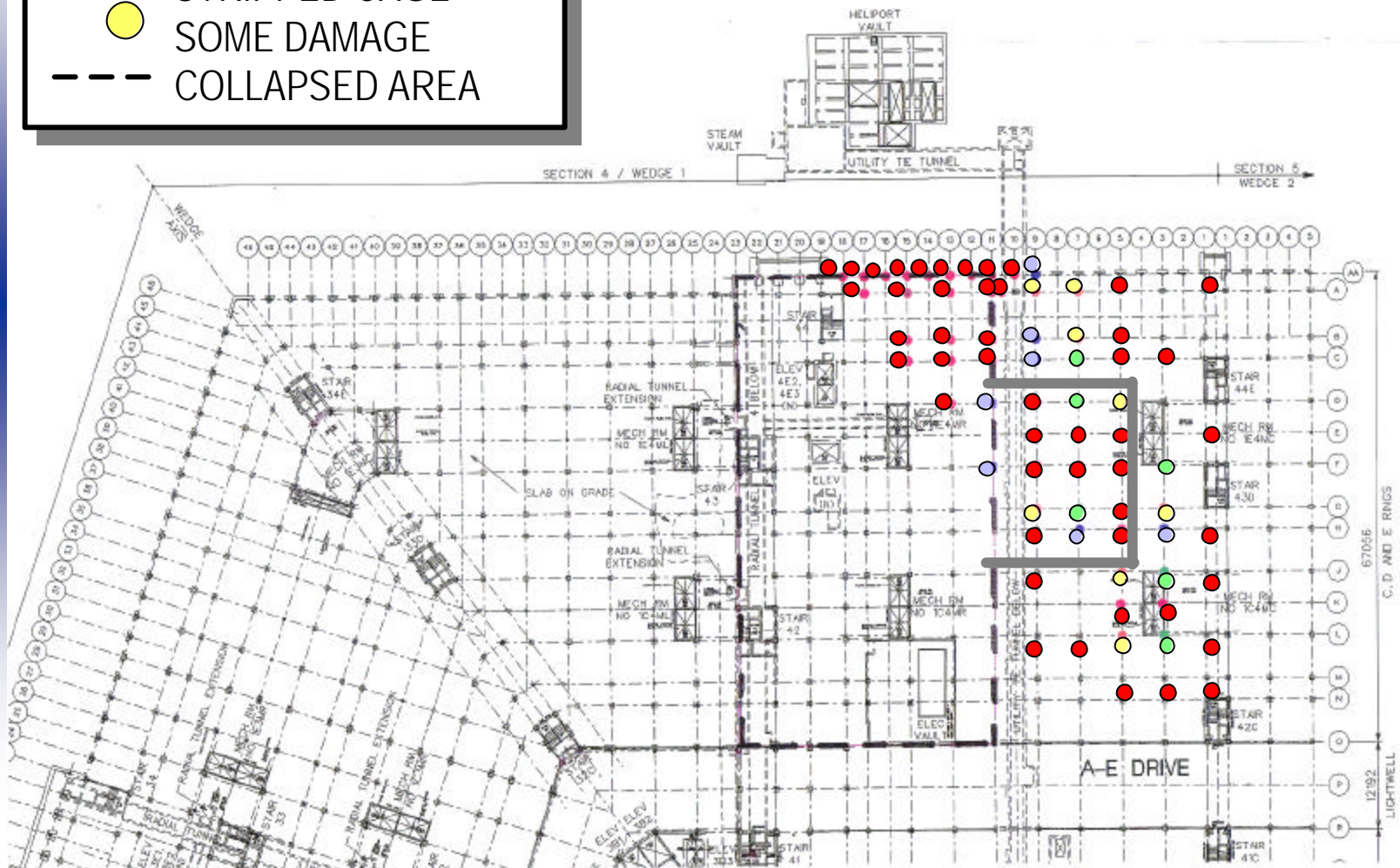




LEGEND

- MISSING
- STRIPPED & BOWED
- STRIPPED CAGE
- SOME DAMAGE
- COLLAPSED AREA

STRUCTURAL DAMAGE



Stabilize

Analyze

Demolish

Rebuild





Sampling Concrete



Helical Anchor Piles



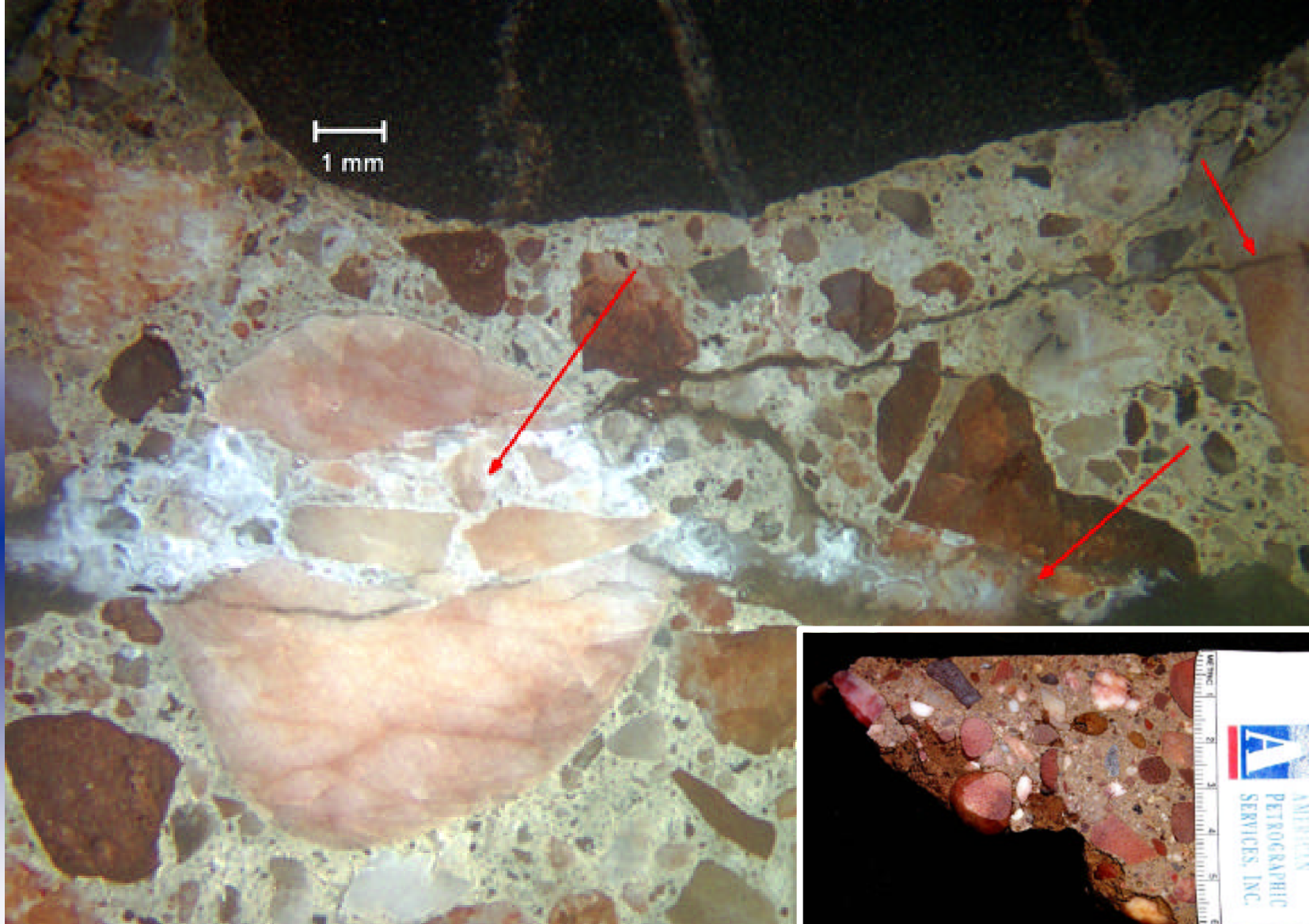
Pile Load Test in Collapse Area

Stabilize
Analyze
Demolish
Rebuild





Stabilize
Analyze
Demolish
Rebuild



Saw-cut cross section of concrete from the support columns showed numerous micro-fractures.





Stabilize
Analyze
Demolish
Rebuild





Stabilize
Analyze
Demolish
Rebuild

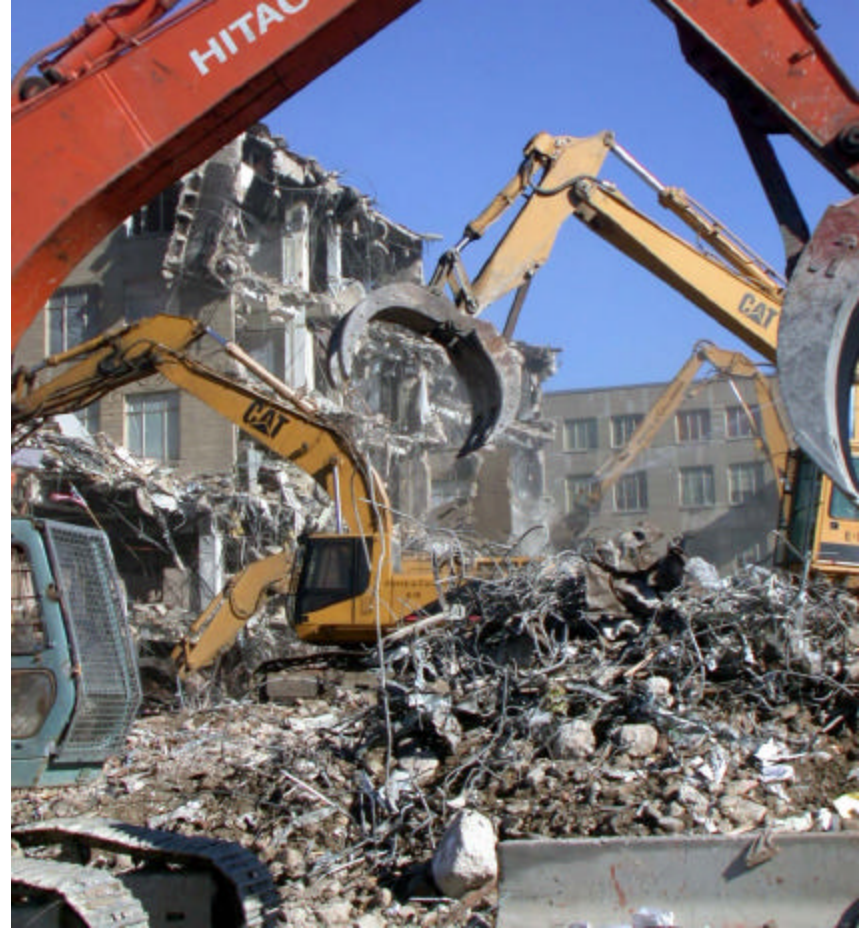


**Demolition began October 18, 2001.
One week after memorial ceremony at Pentagon.**





Stabilize
Analyze
Demolish
Rebuild



NOVEMBER 5, 2001





Stabilize
Analyze
Demolish
Rebuild



Photo date: 11/27/01

**Demolition completed Nov 19, 2001.
Four weeks ahead of most aggressive schedule.**





Stabilize
Analyze
Demolish
Rebuild



February 13, 2002: Third floor deck is nearly finished, and work begins on support columns for the fourth floor.





Stabilize
Analyze
Demolish
Rebuild



**Reconstruction began November 19, 2001.
A steel cage of spiral rebar is formed.**





Stabilize
Analyze
Demolish
Rebuild



**Rebar cage is joined to 1.25" high strength,
stainless steel dowel rods planted in concrete slab.**





Stabilize
Analyze
Demolish
Rebuild



Formwork is secured around steel rebar.





Stabilize
Analyze
Demolish
Rebuild



Concrete is poured into the top of the formwork.





Stabilize
Analyze
Demolish
Rebuild



Concrete is pumped to the upper floors through a line that runs from the outside of the building.





Stabilize
Analyze
Demolish
Rebuild



**Plastic formwork liner
replicates the look of
original 1941 structure.**





Stabilize
Analyze
Demolish
Rebuild



**December 28, 2002:
First E-ring window frame
installed.**

**February 5, 2002:
The first blast
window installed
on the E-ring.**





Stabilize
Analyze
Demolish
Rebuild



February 25, 2002 – The first piece of limestone is placed on the building exterior





Stabilize
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Rebuild



Limestone being hung on the E-Ring facade





Stabilize
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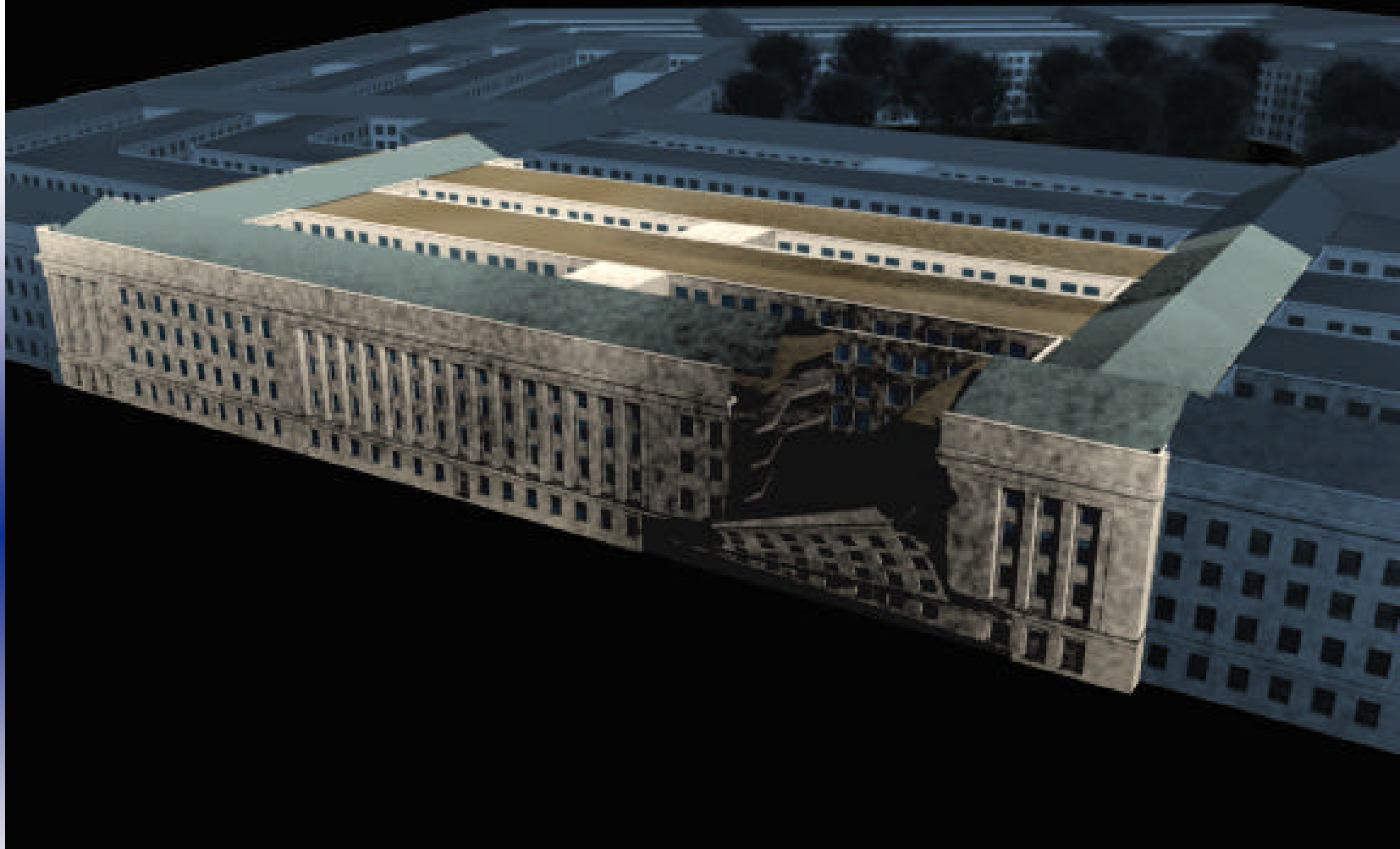


Early-morning foreman's meetings are held daily to keep projects on track.





Stabilize
Analyze
Demolish
Rebuild

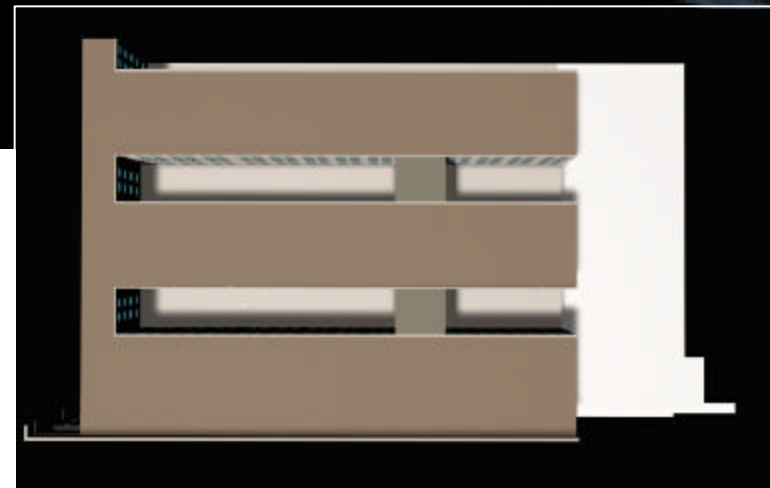
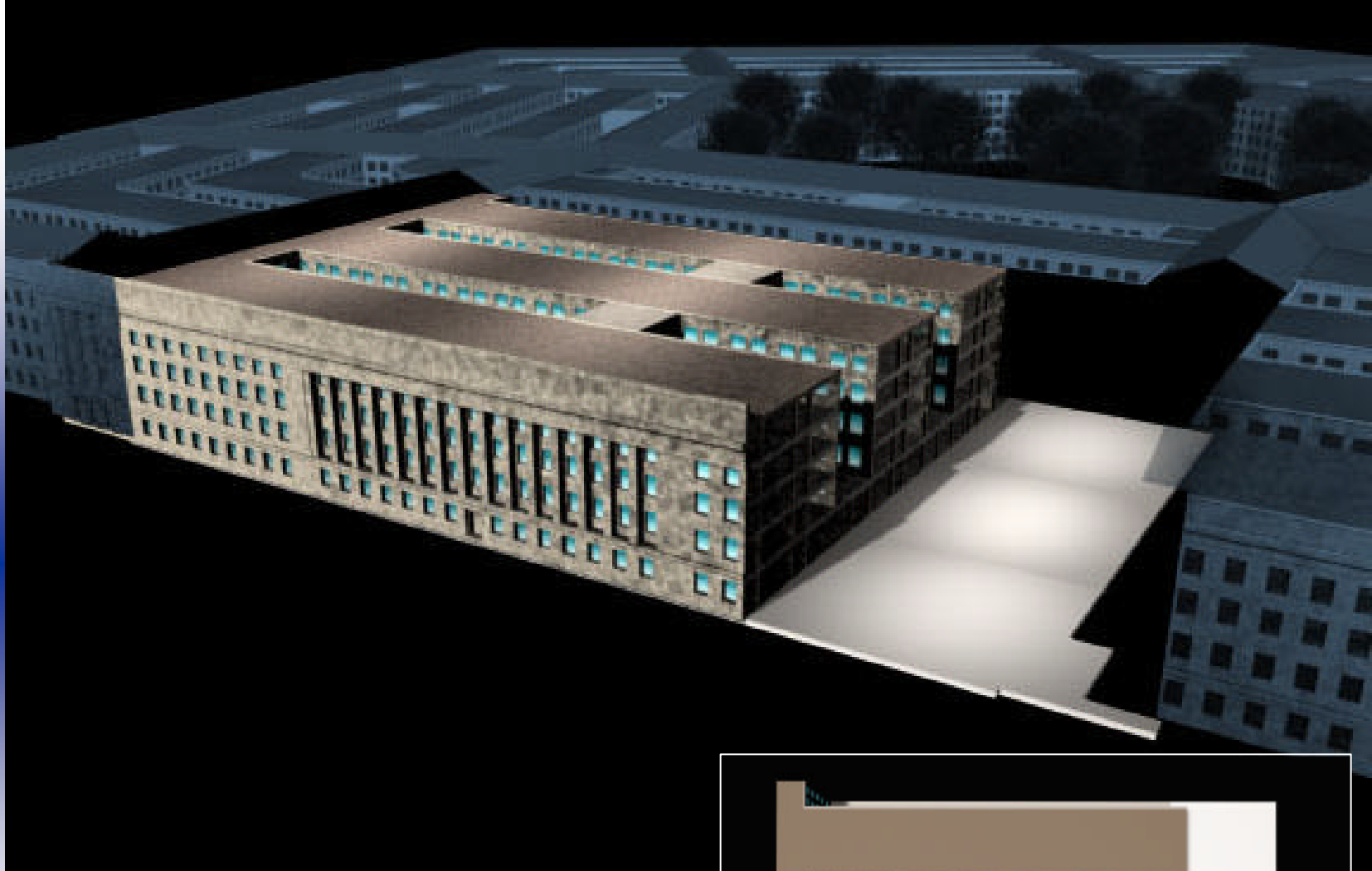


Conceptual rendering of reconstruction process



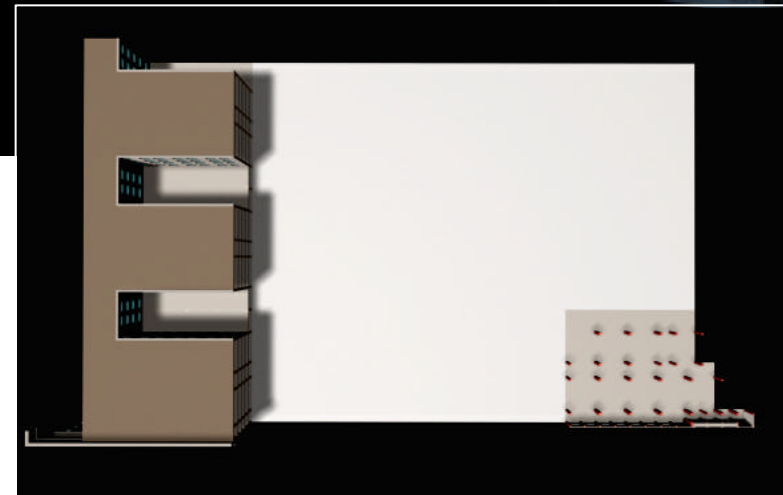
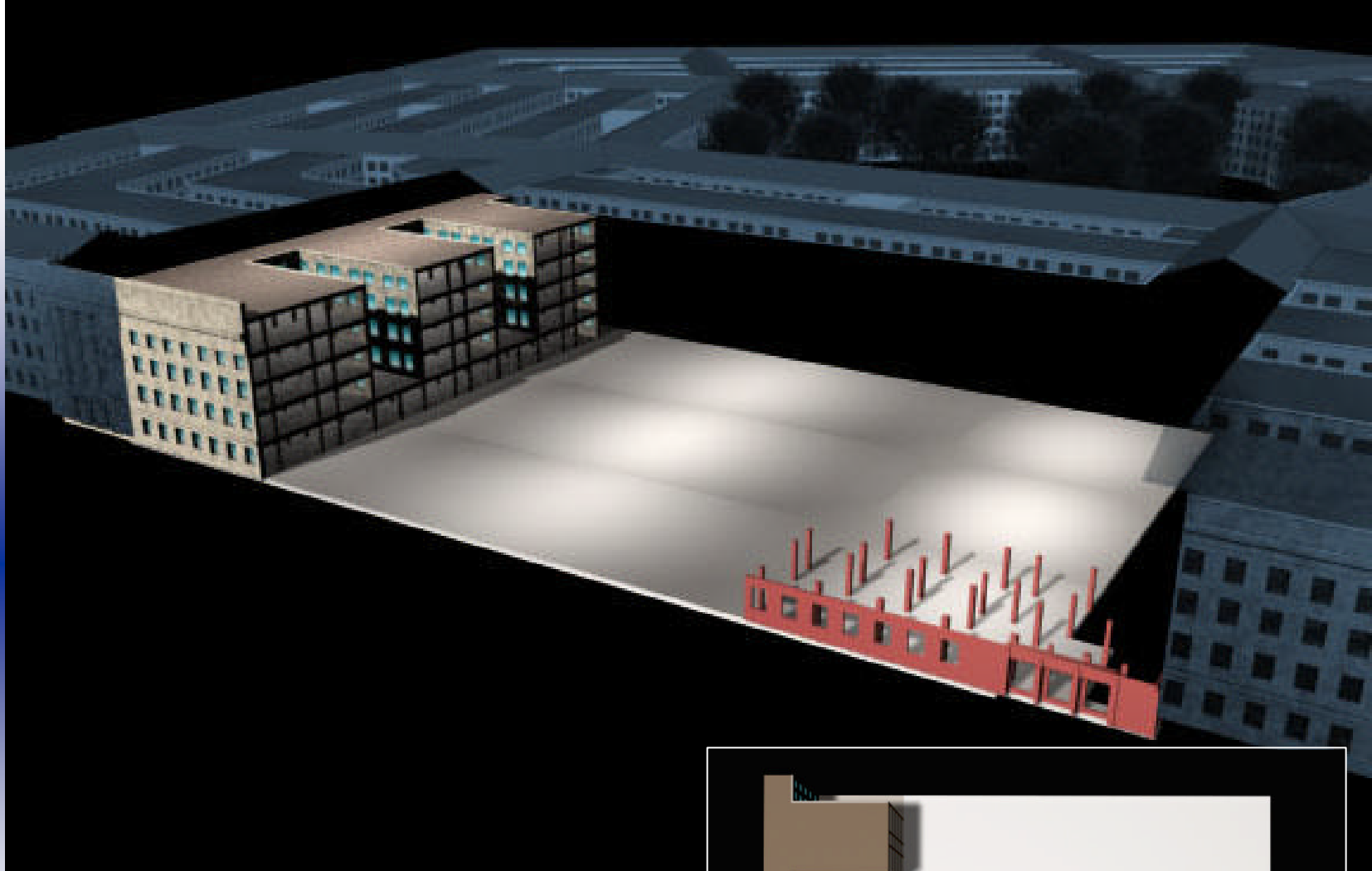


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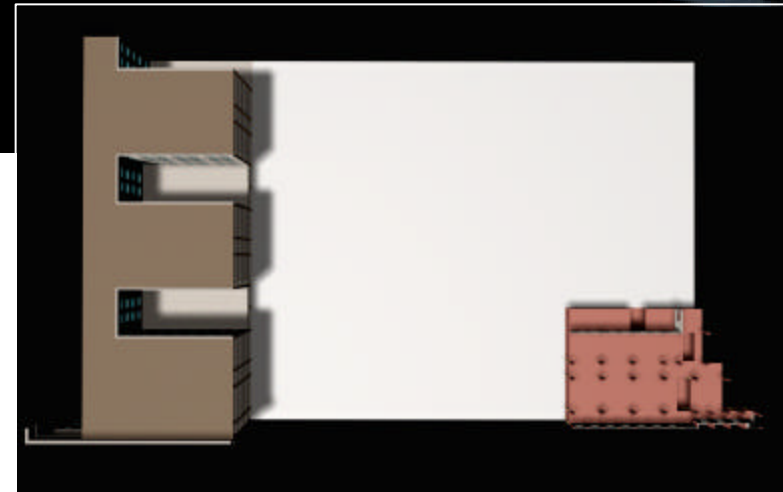
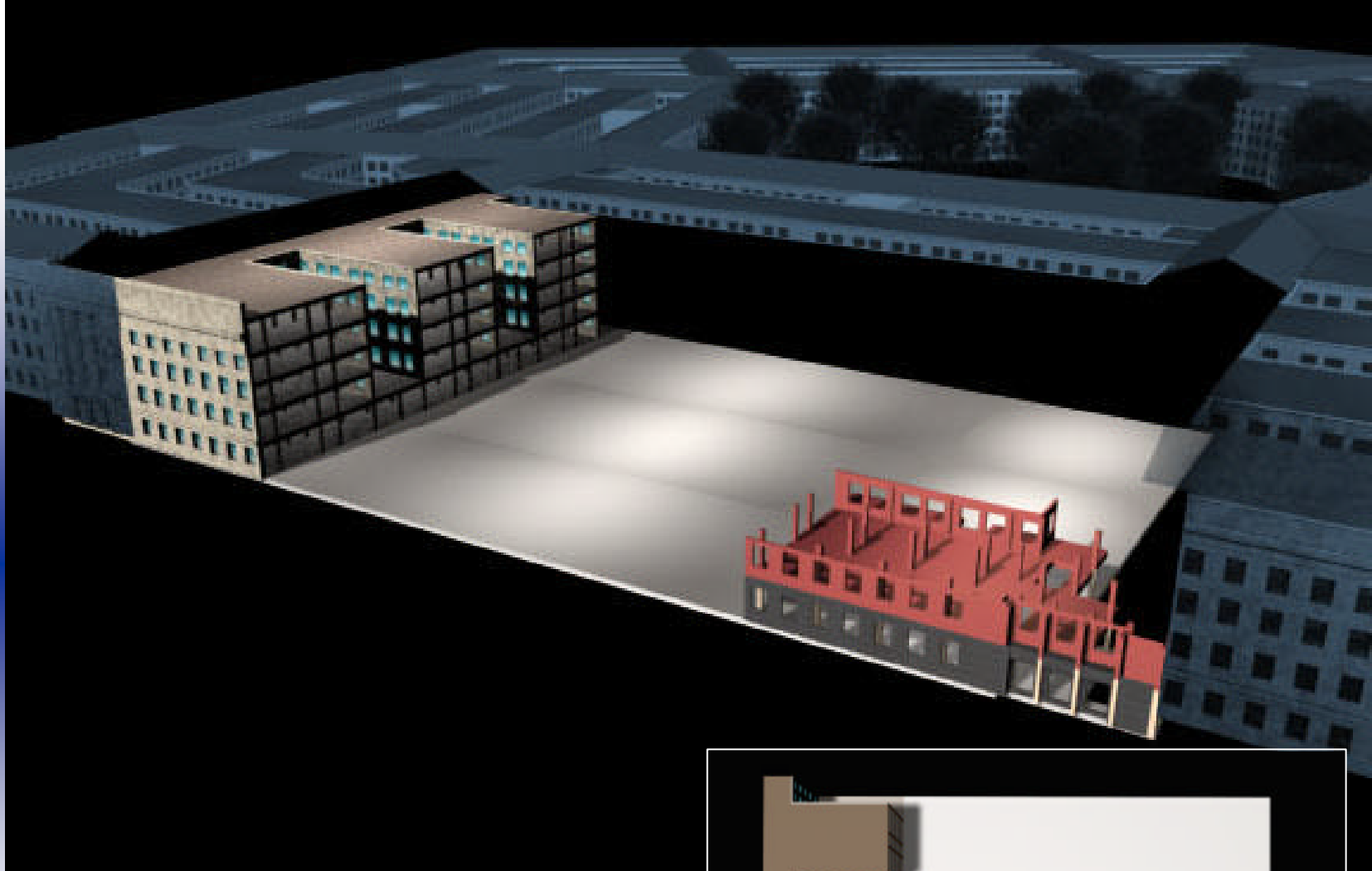


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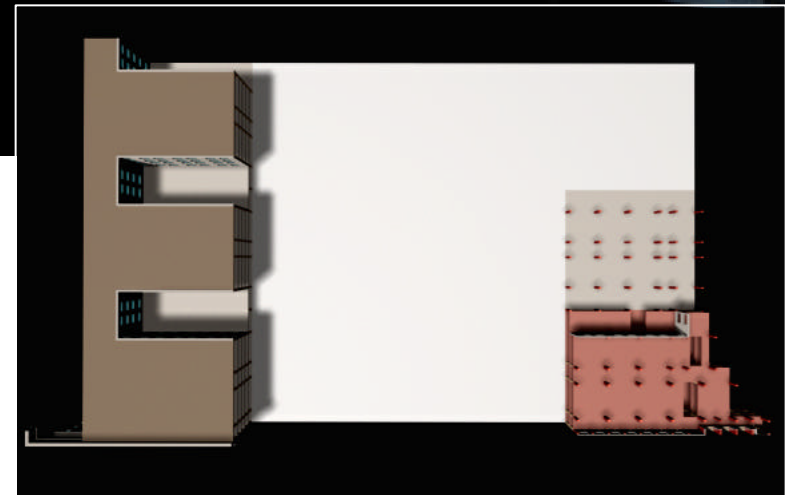
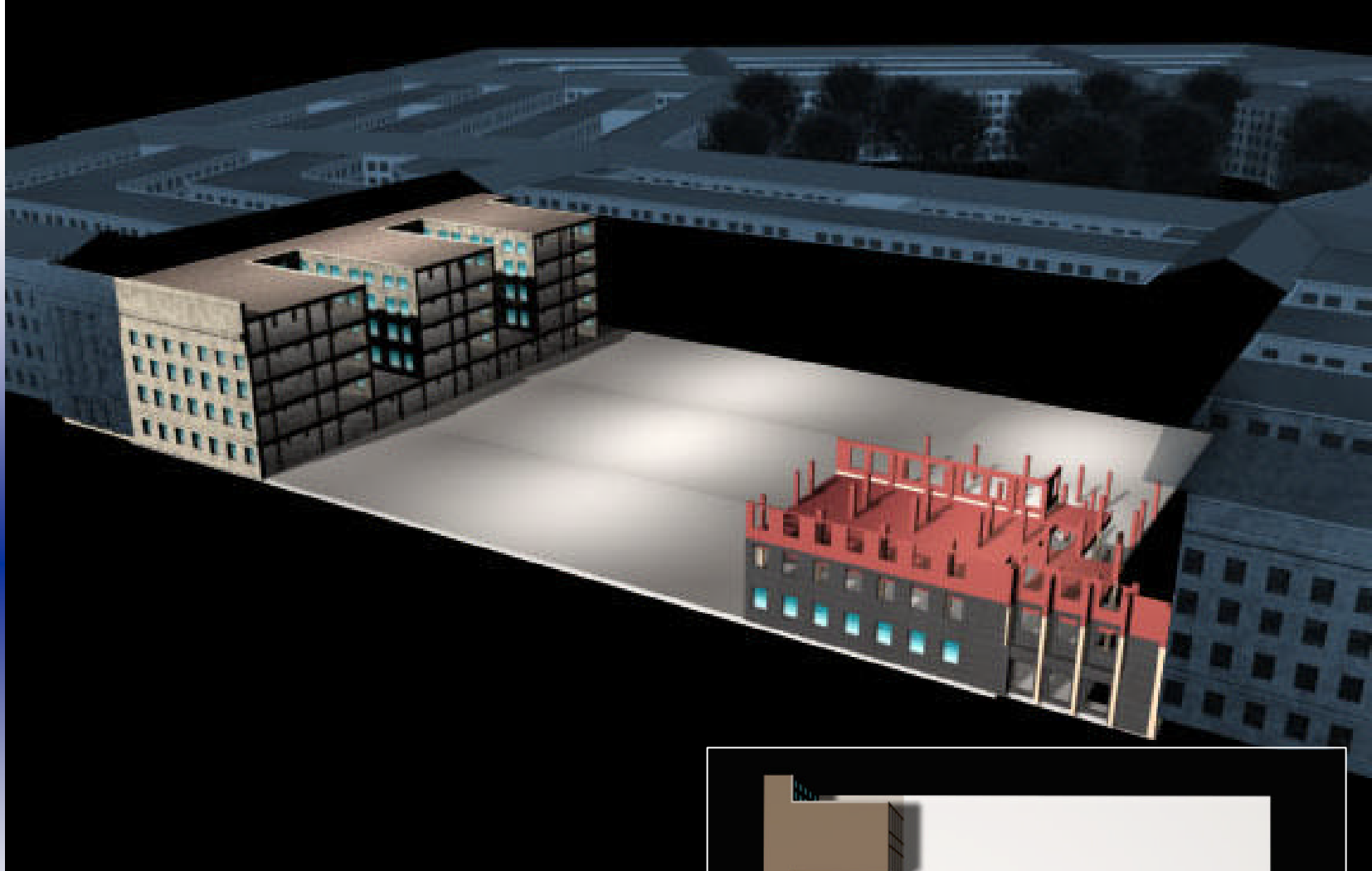


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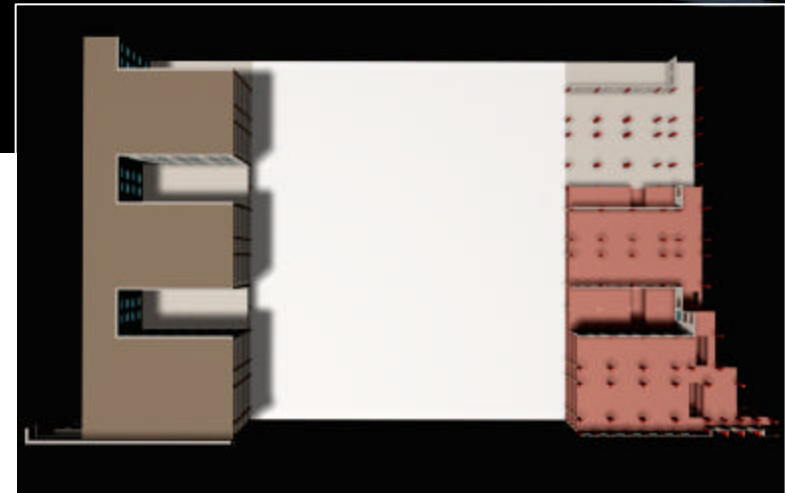
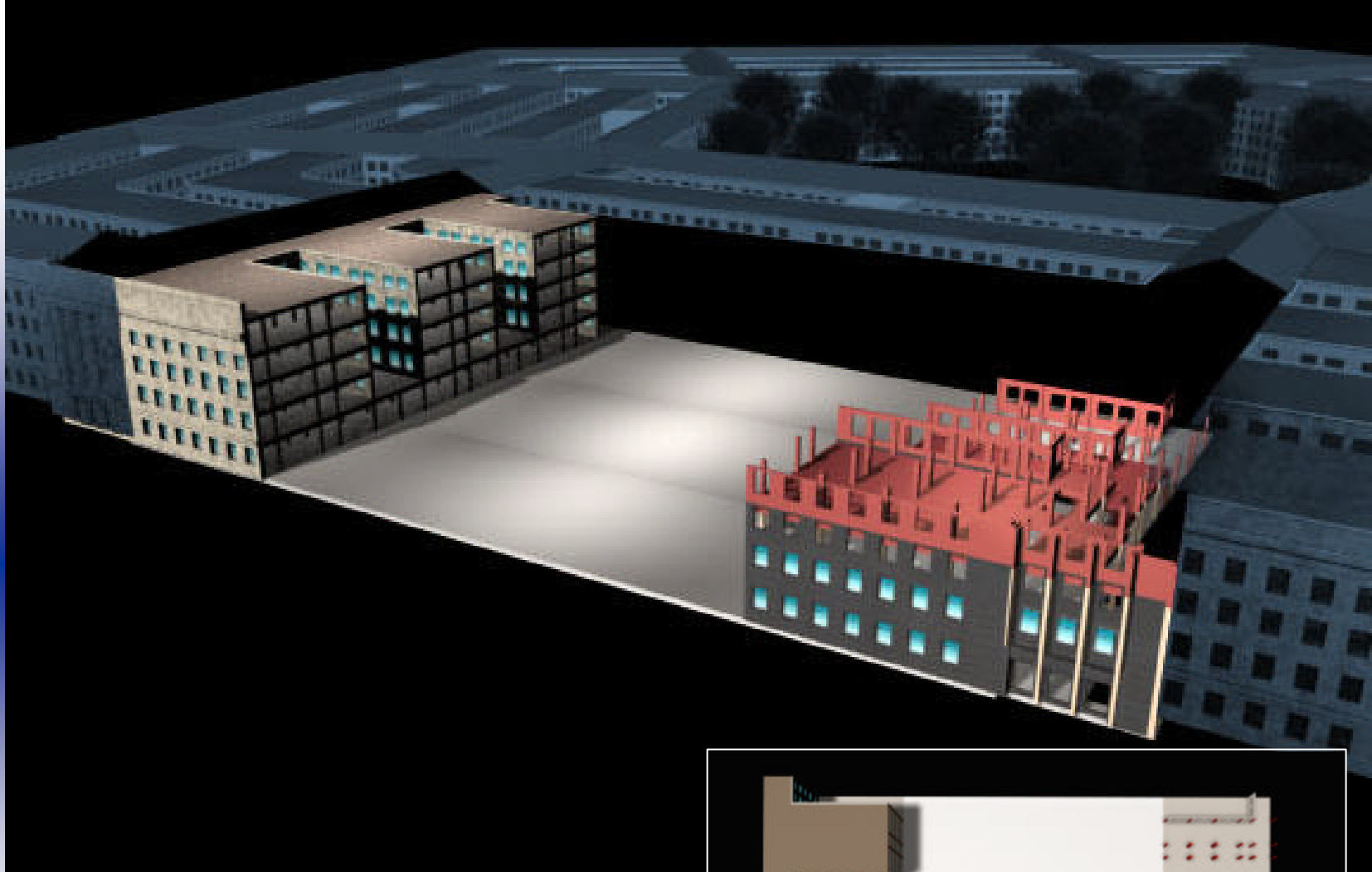


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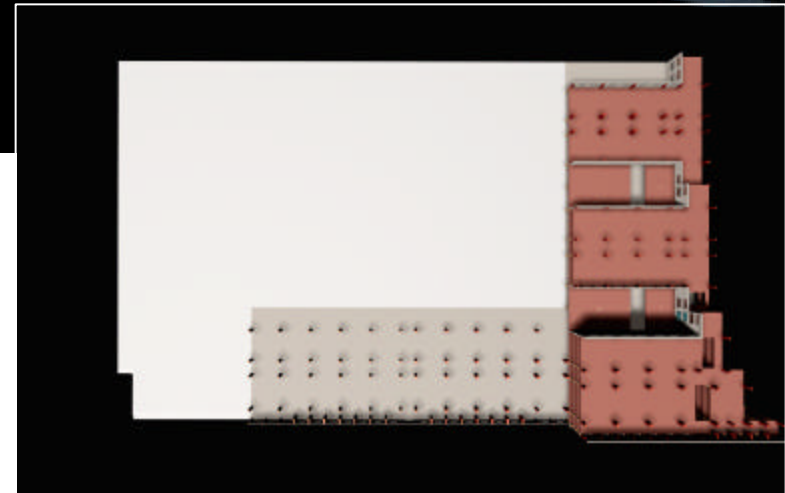
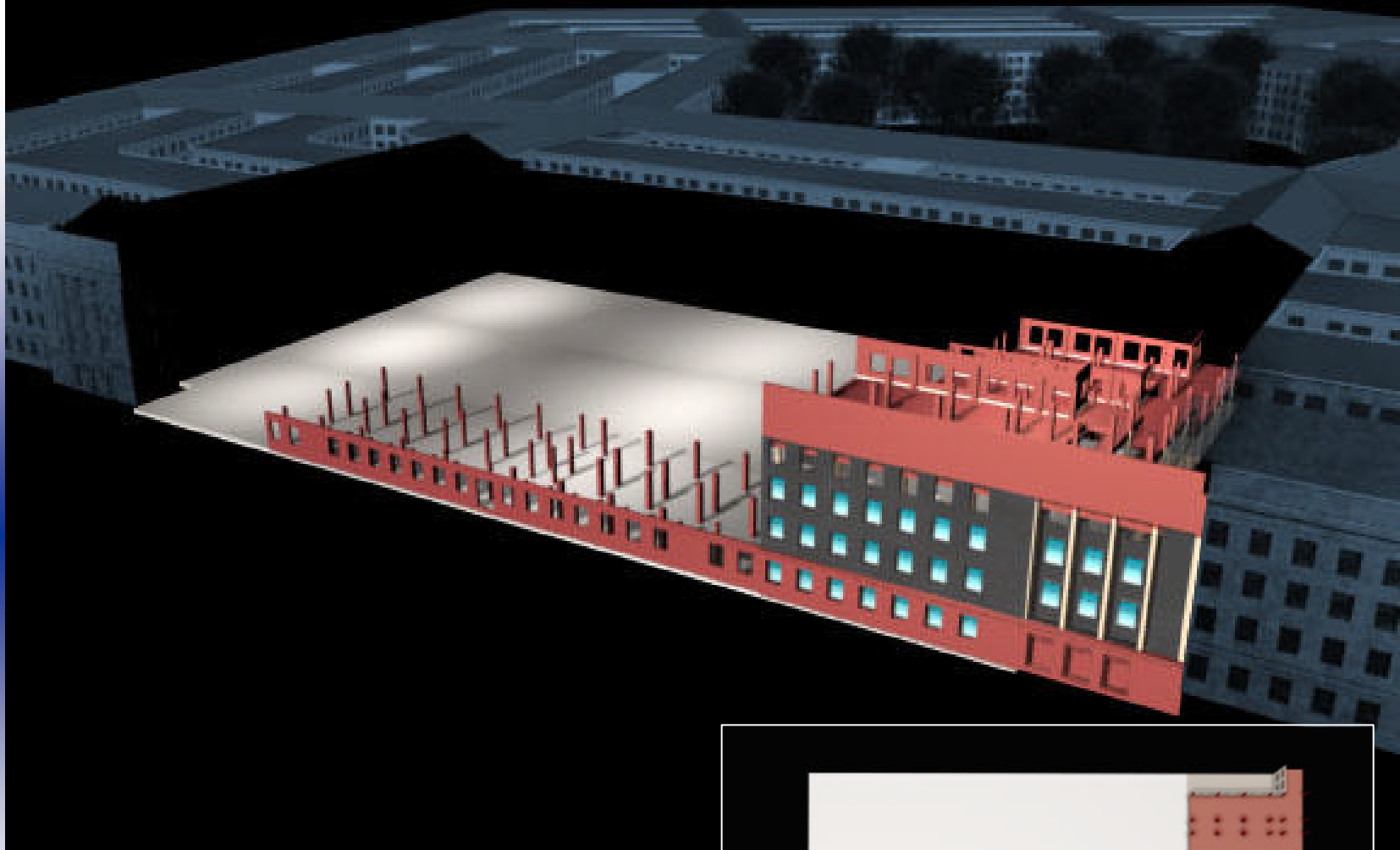


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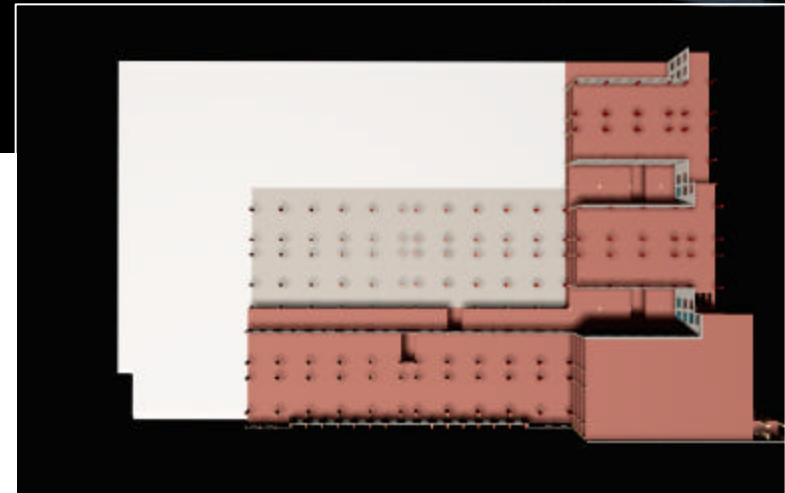
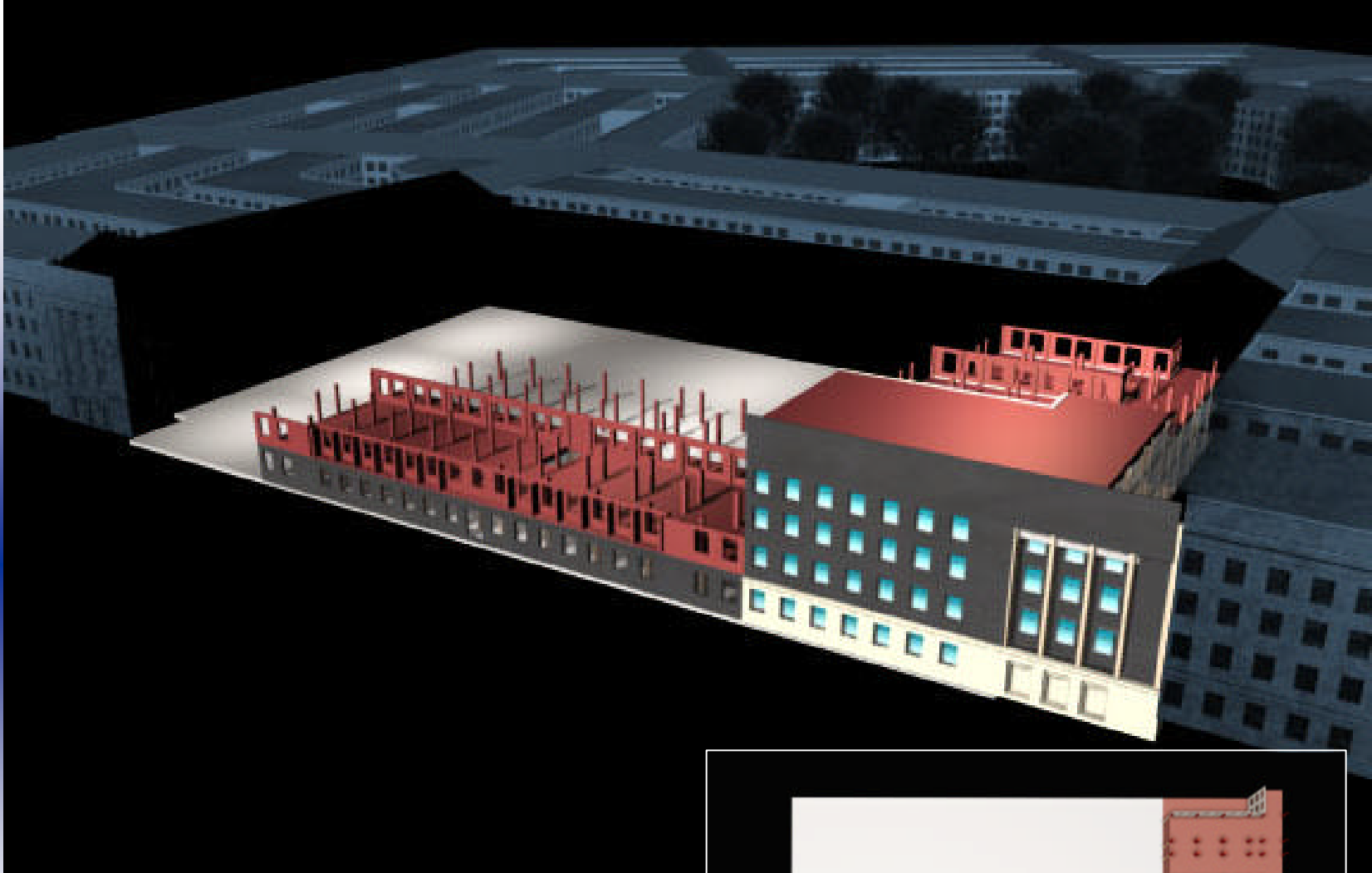


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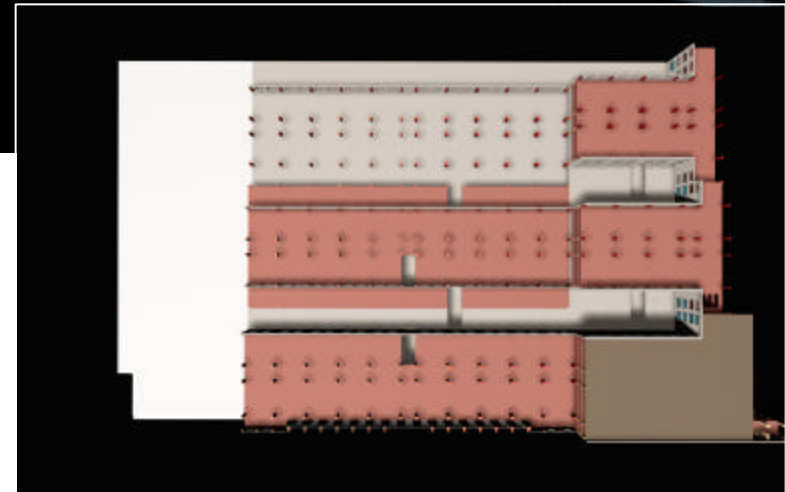
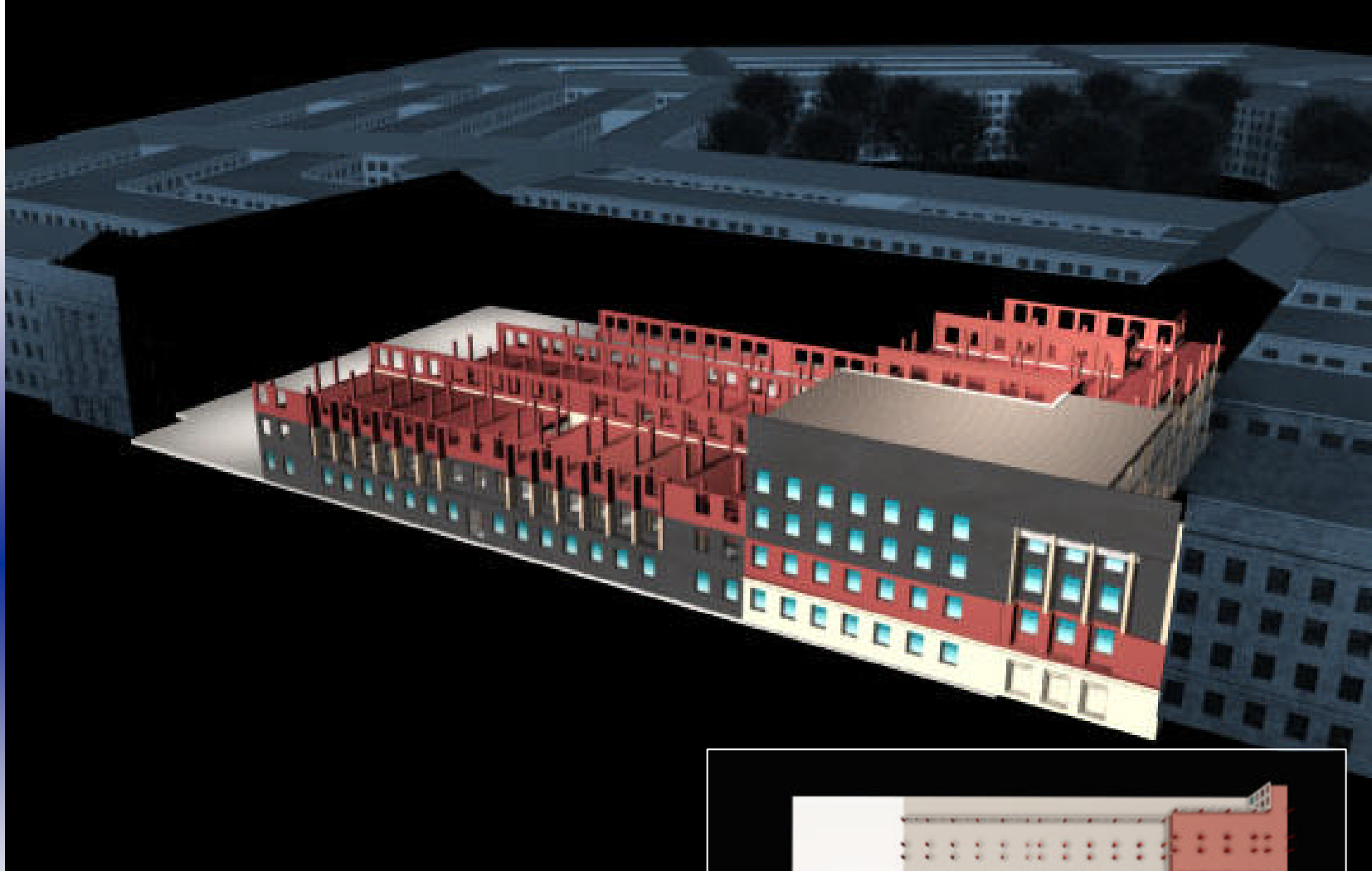


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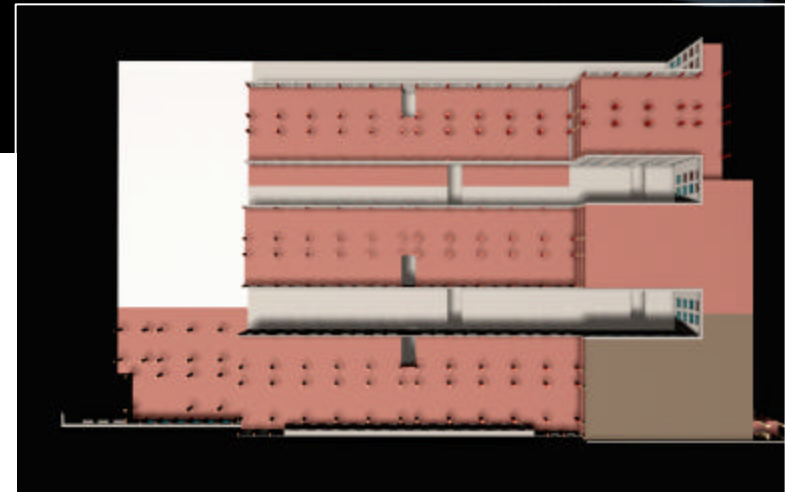
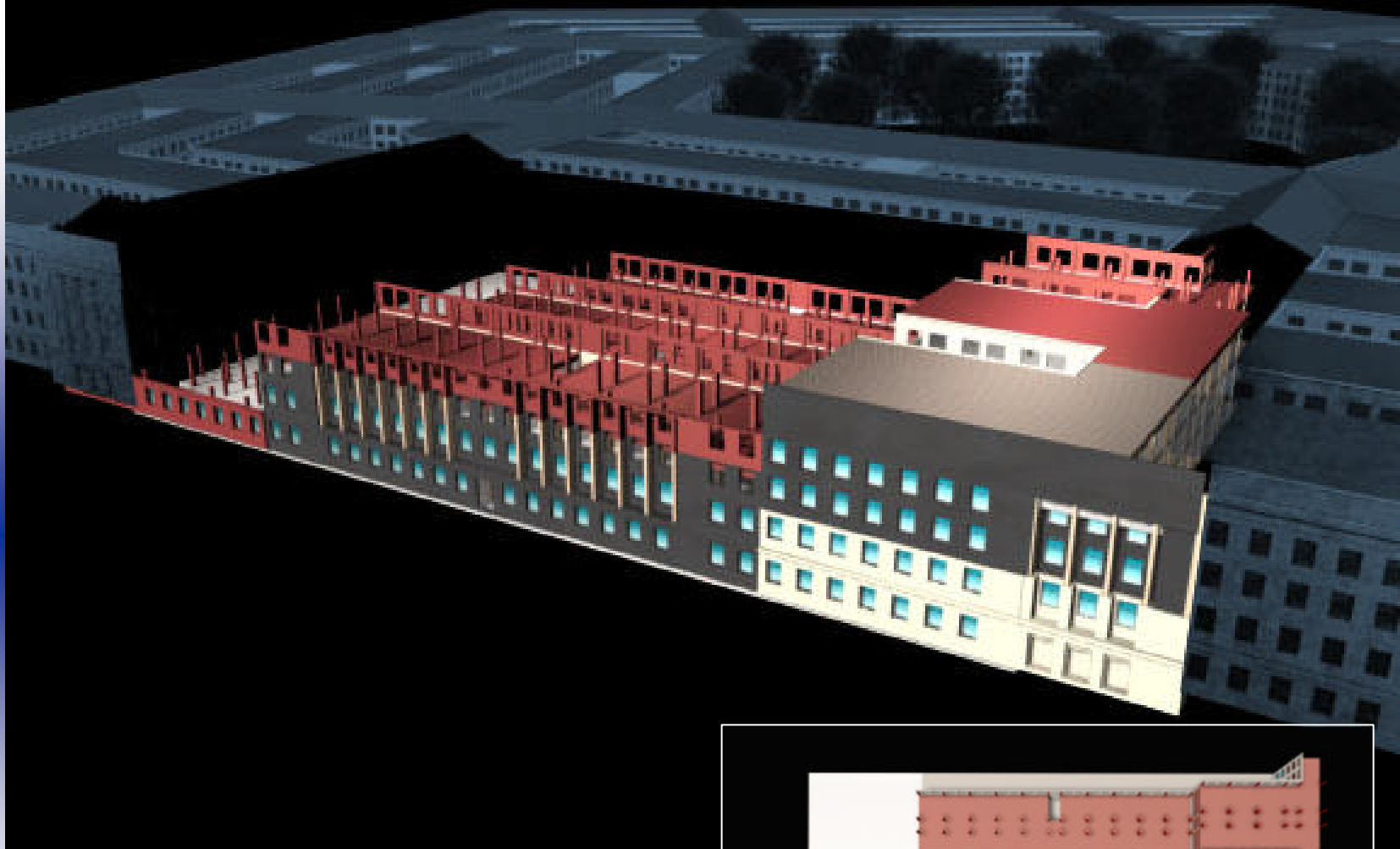


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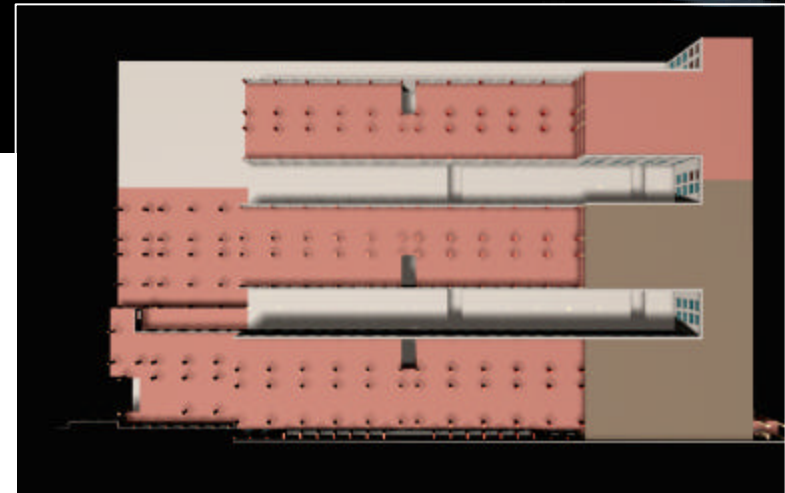
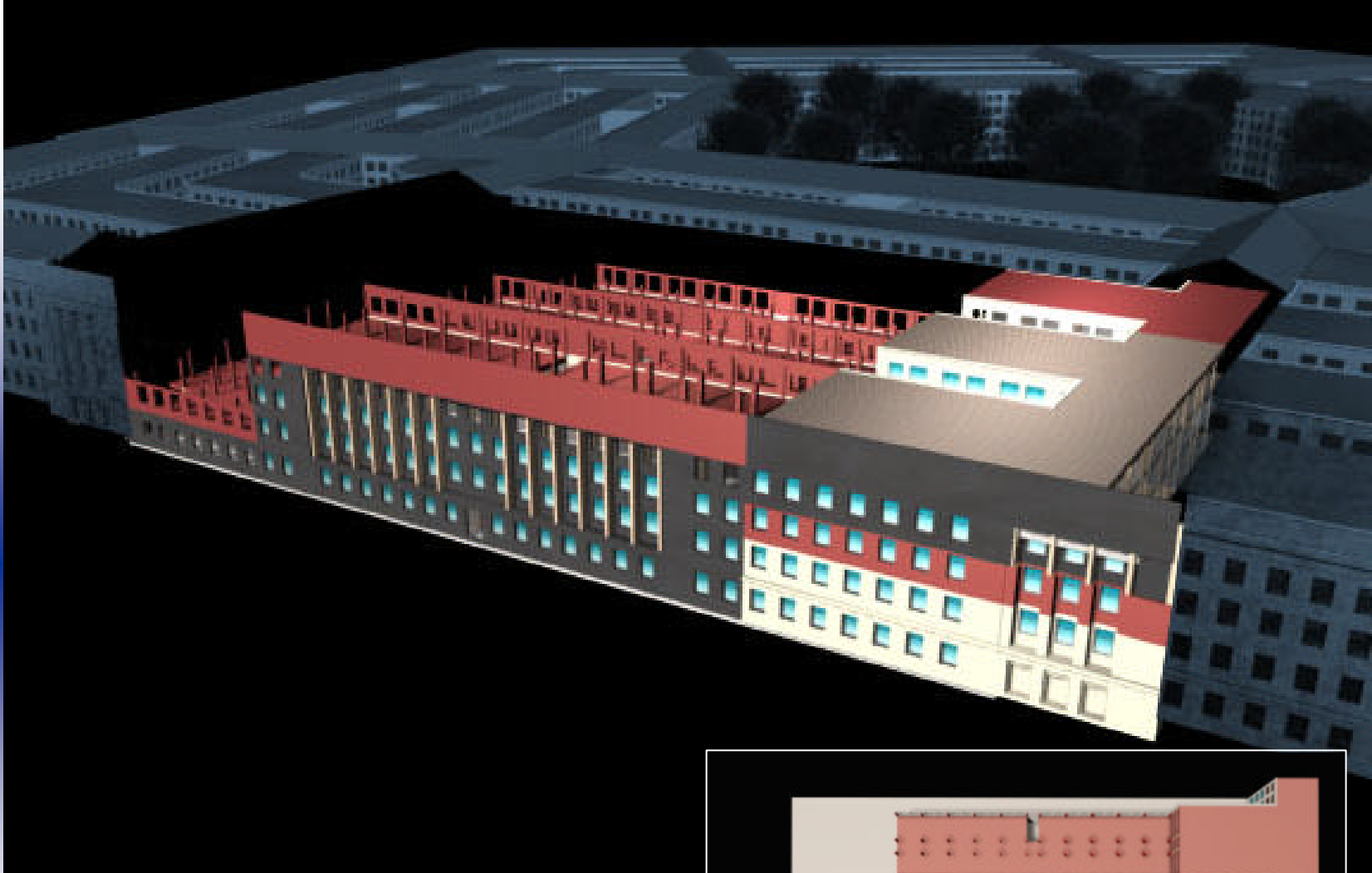


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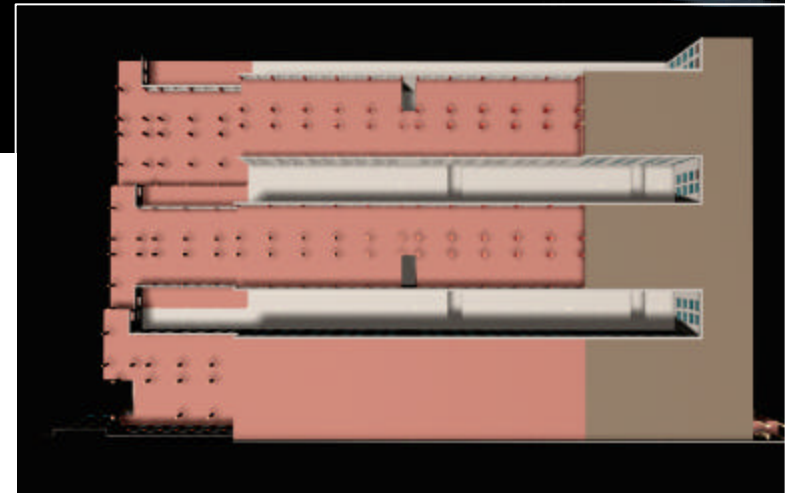
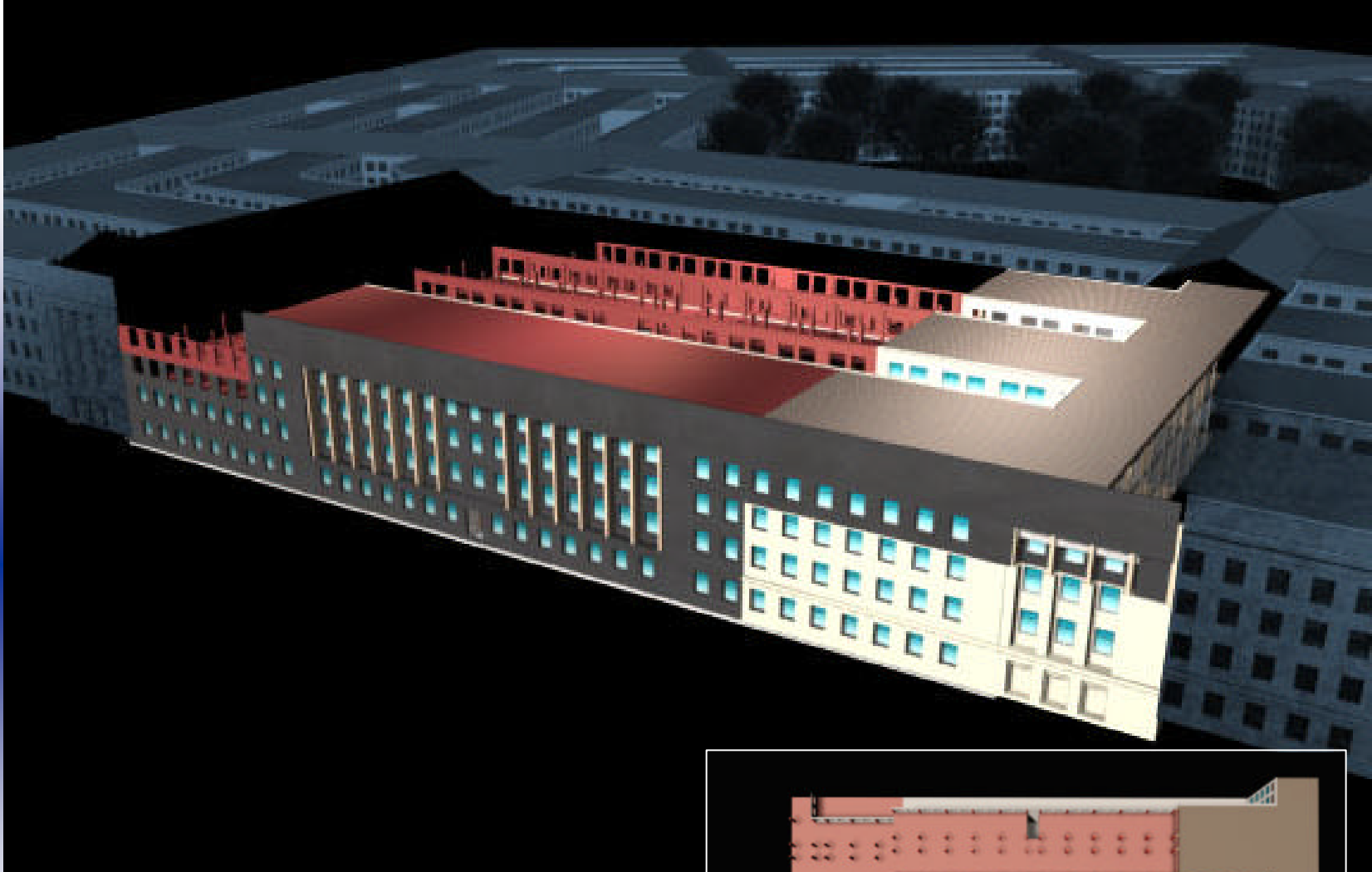


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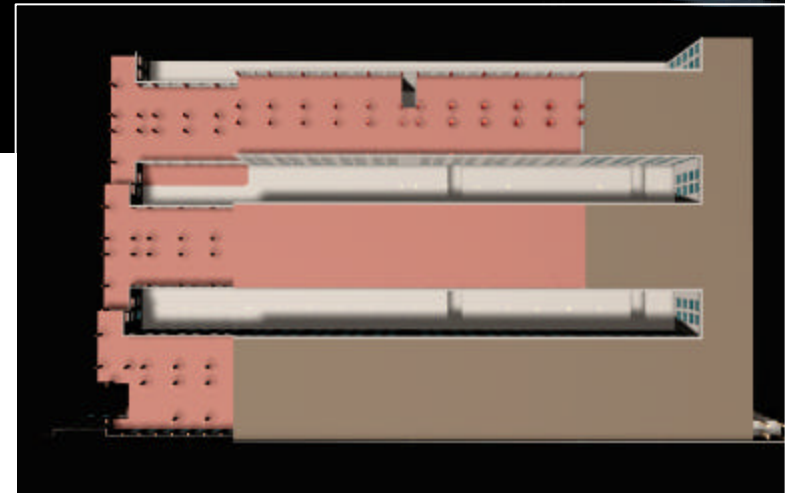
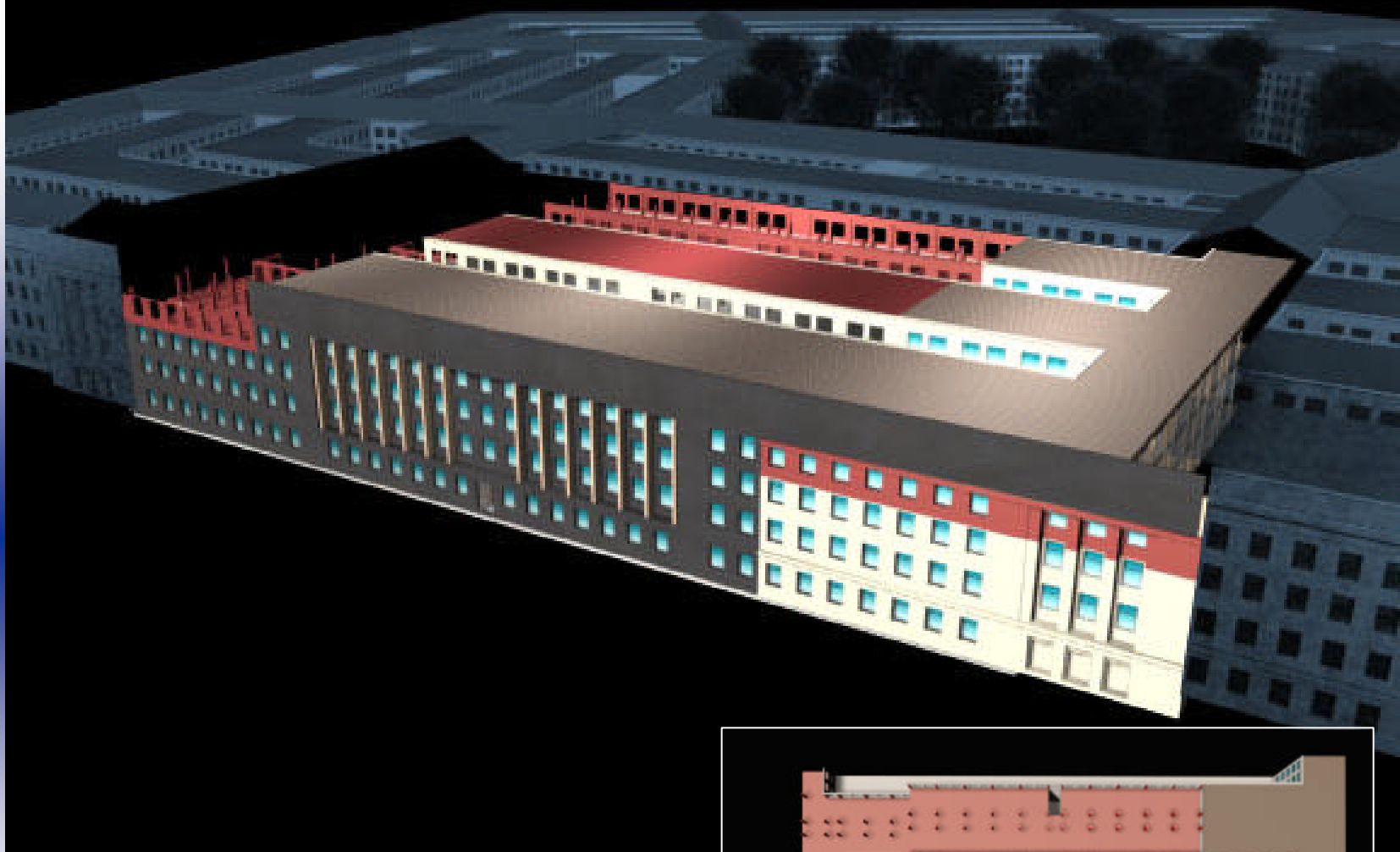


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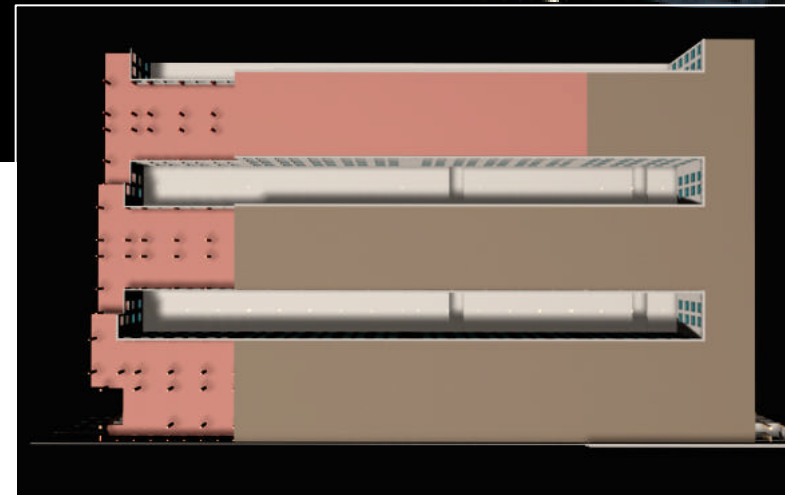
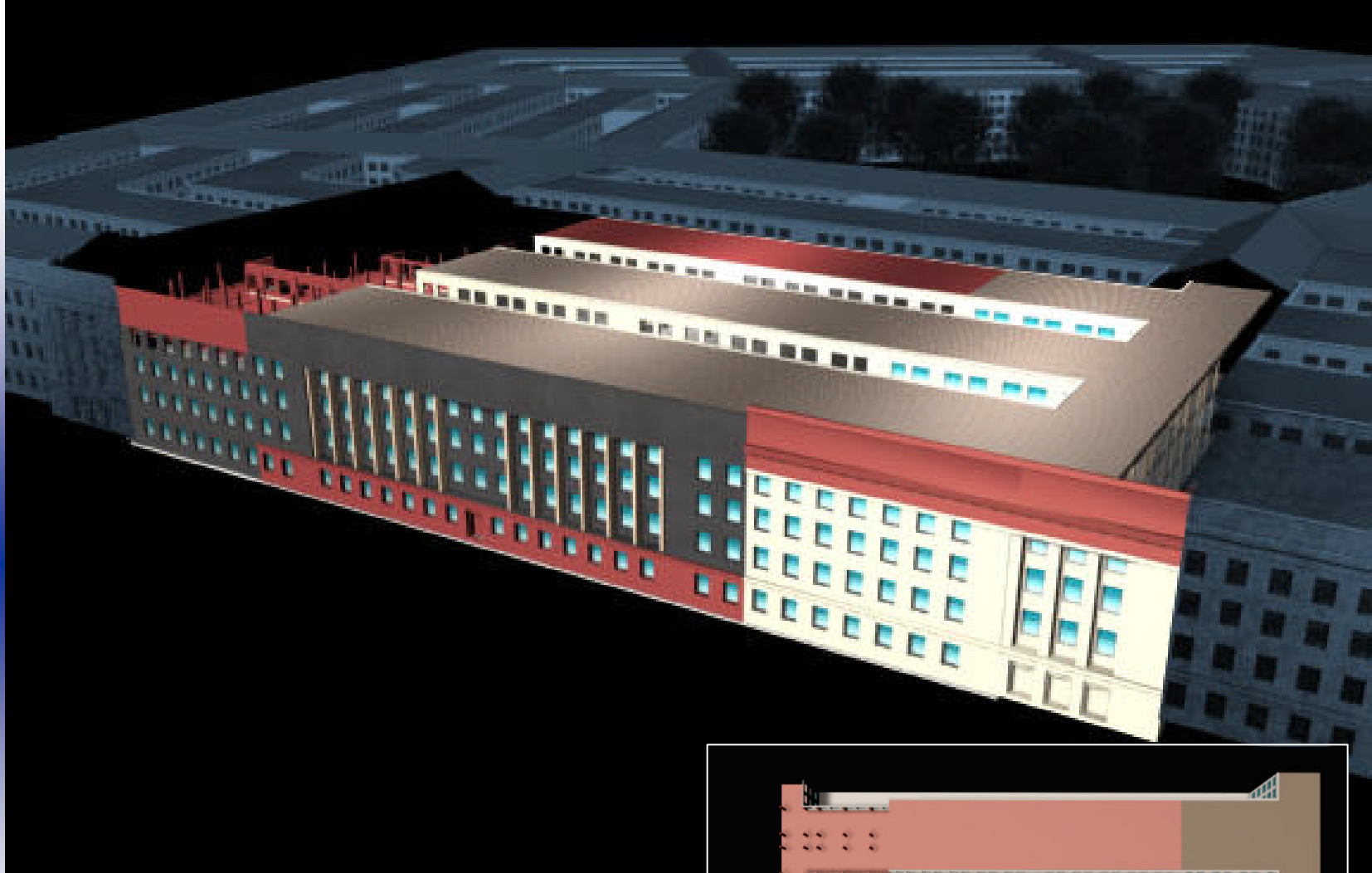


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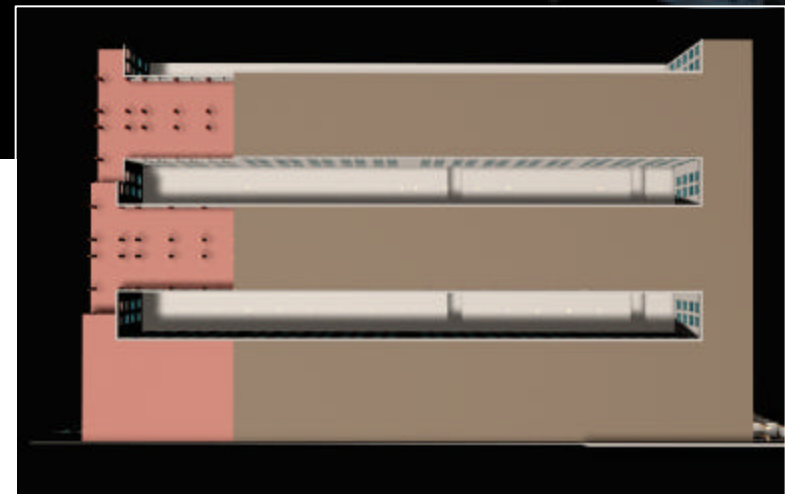
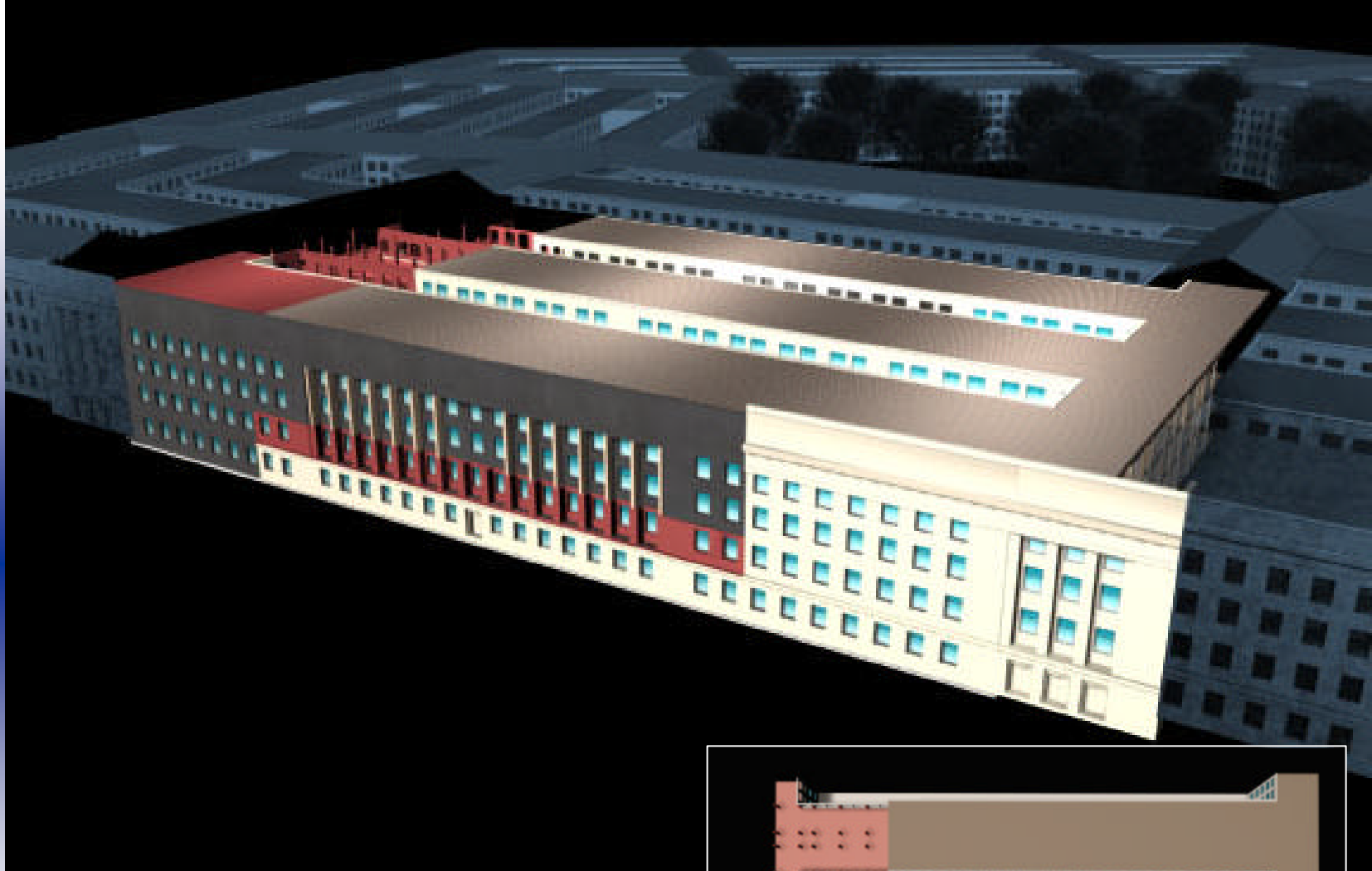


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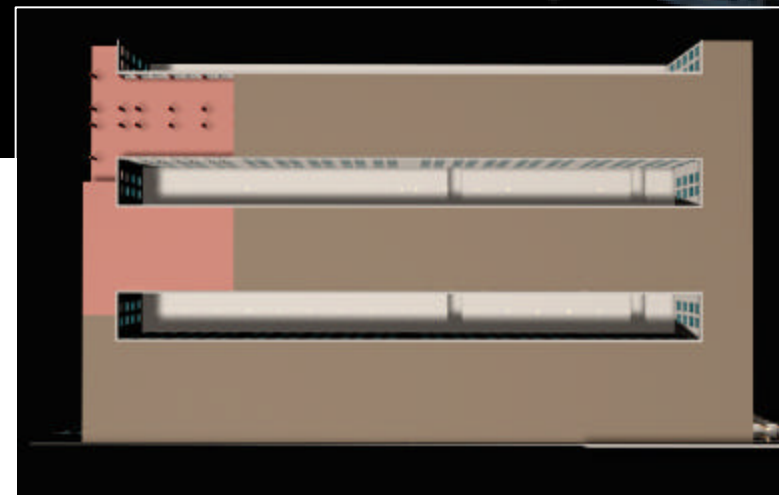
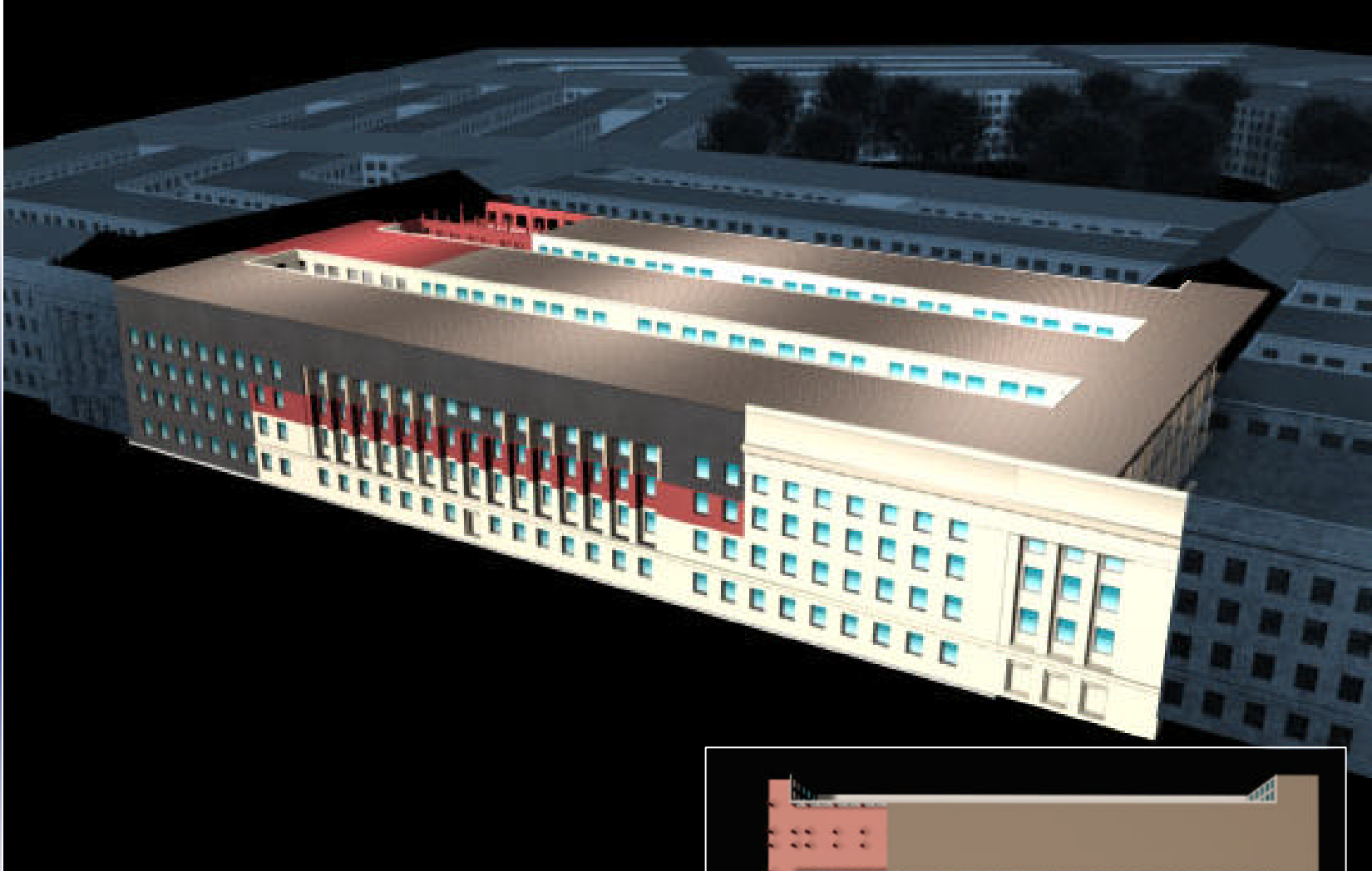


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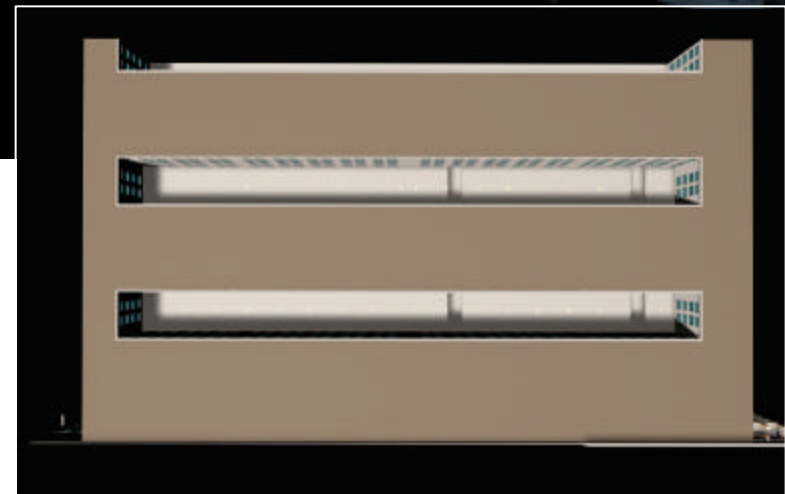
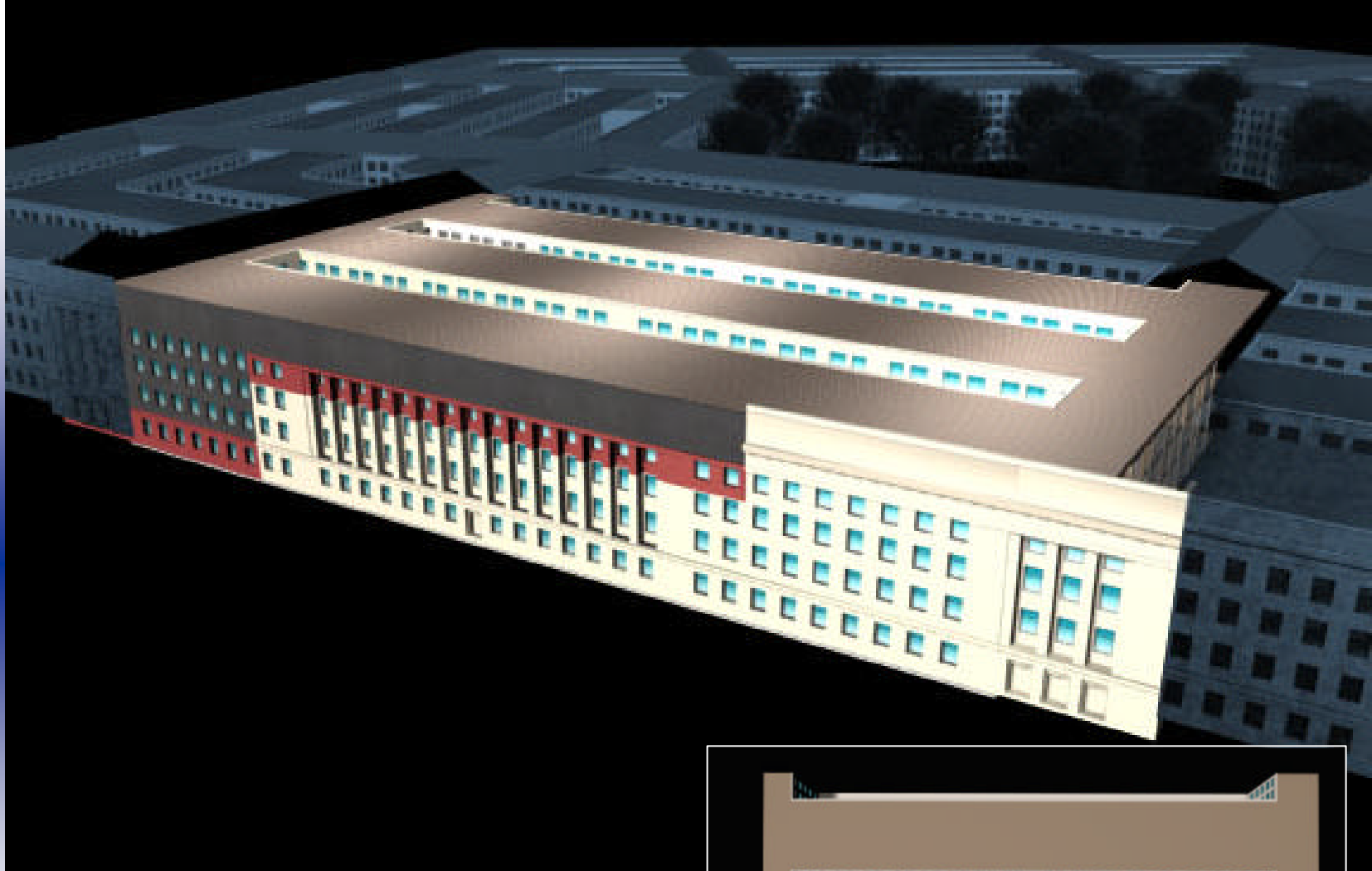


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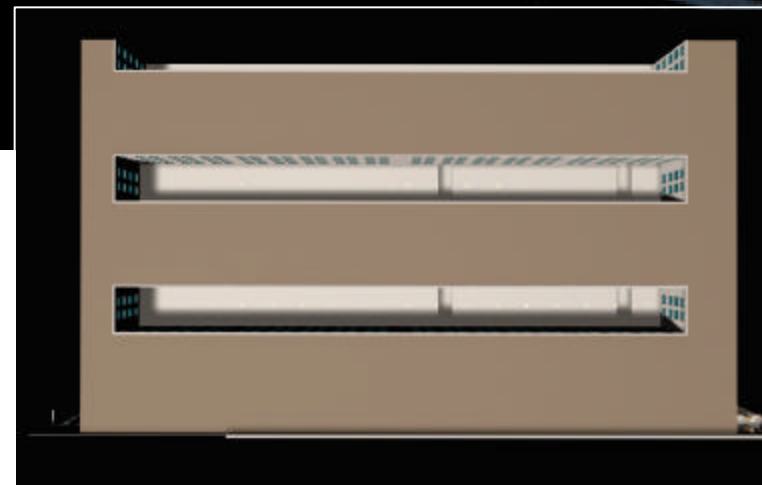
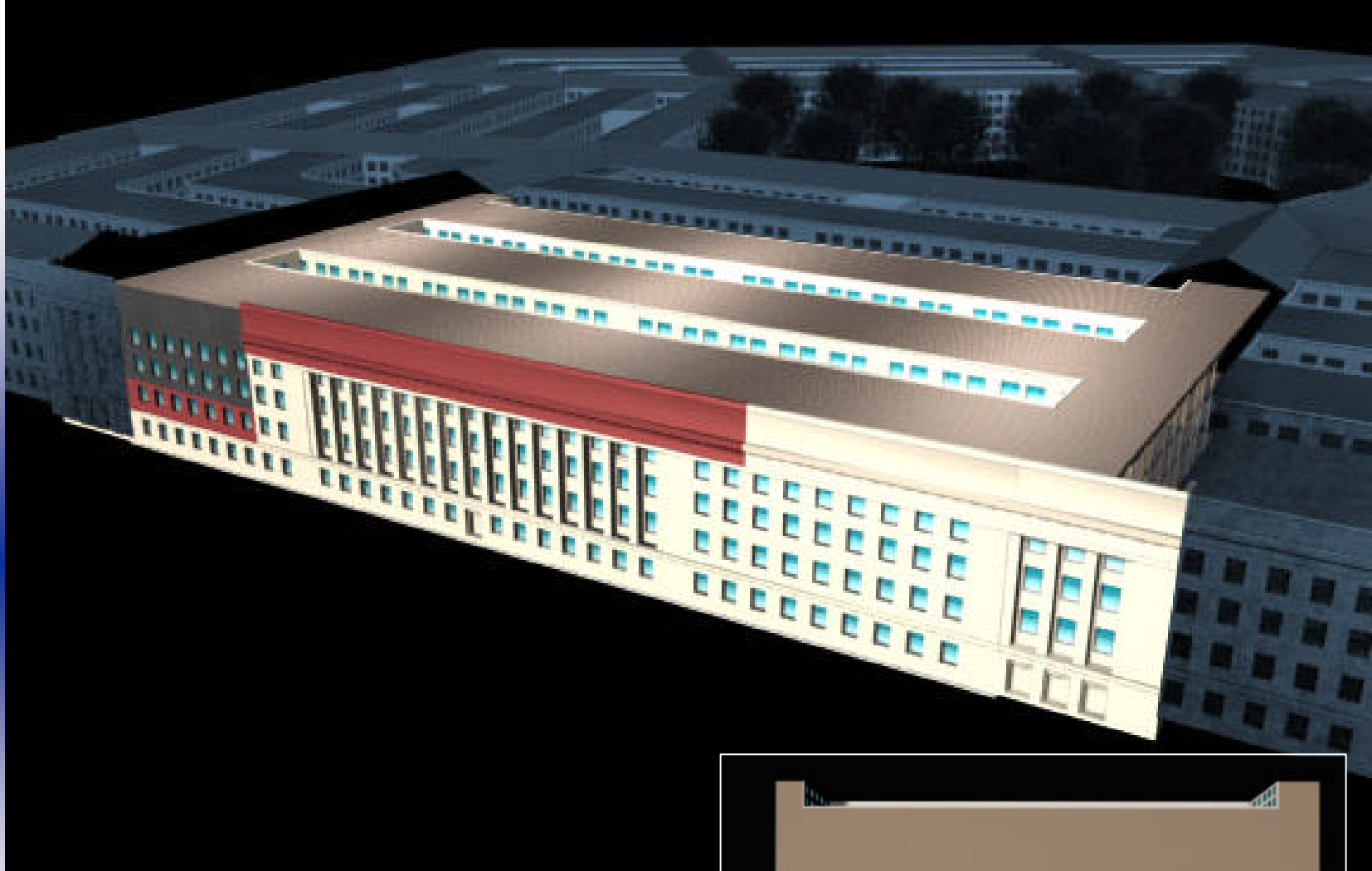


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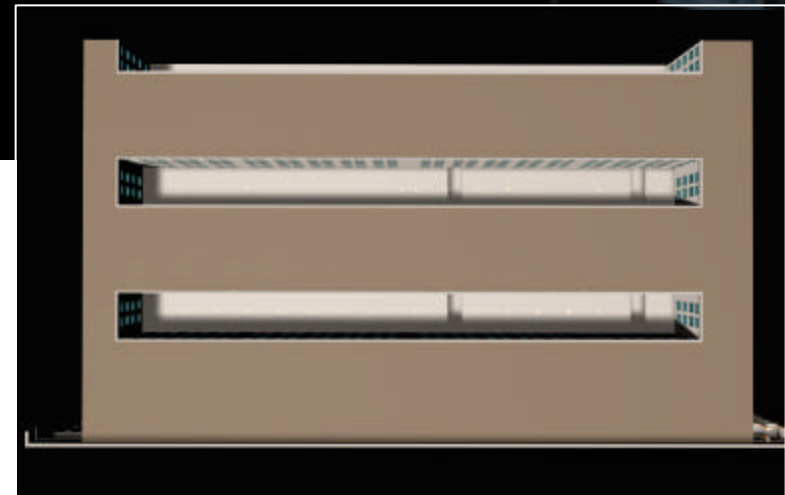
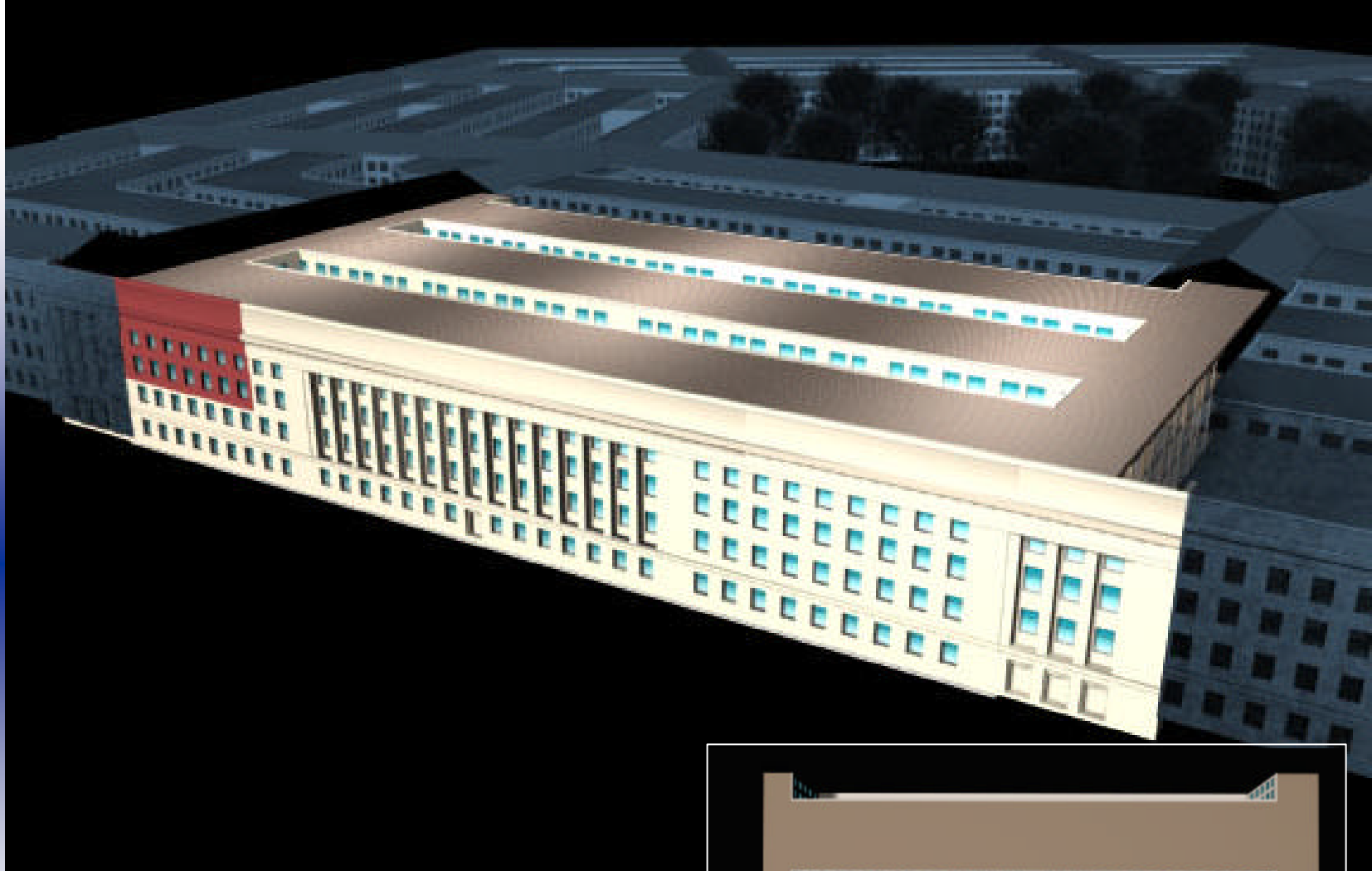


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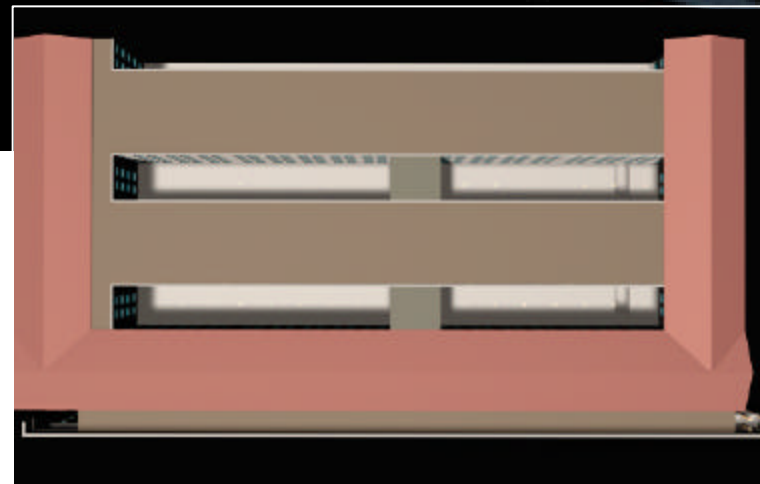


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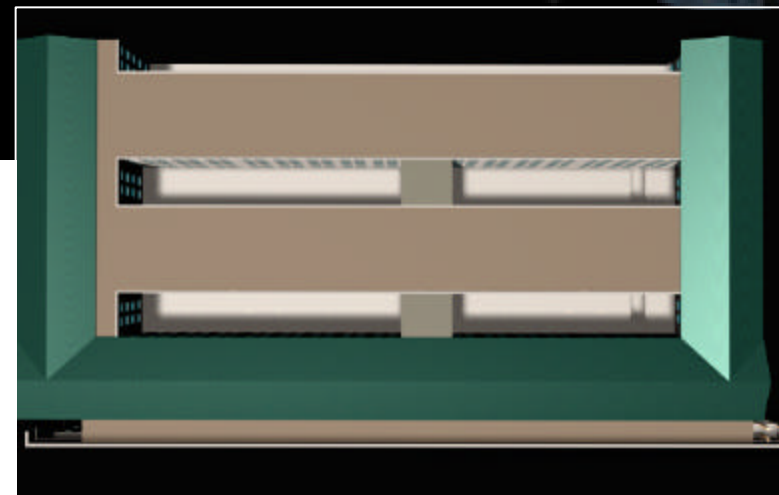
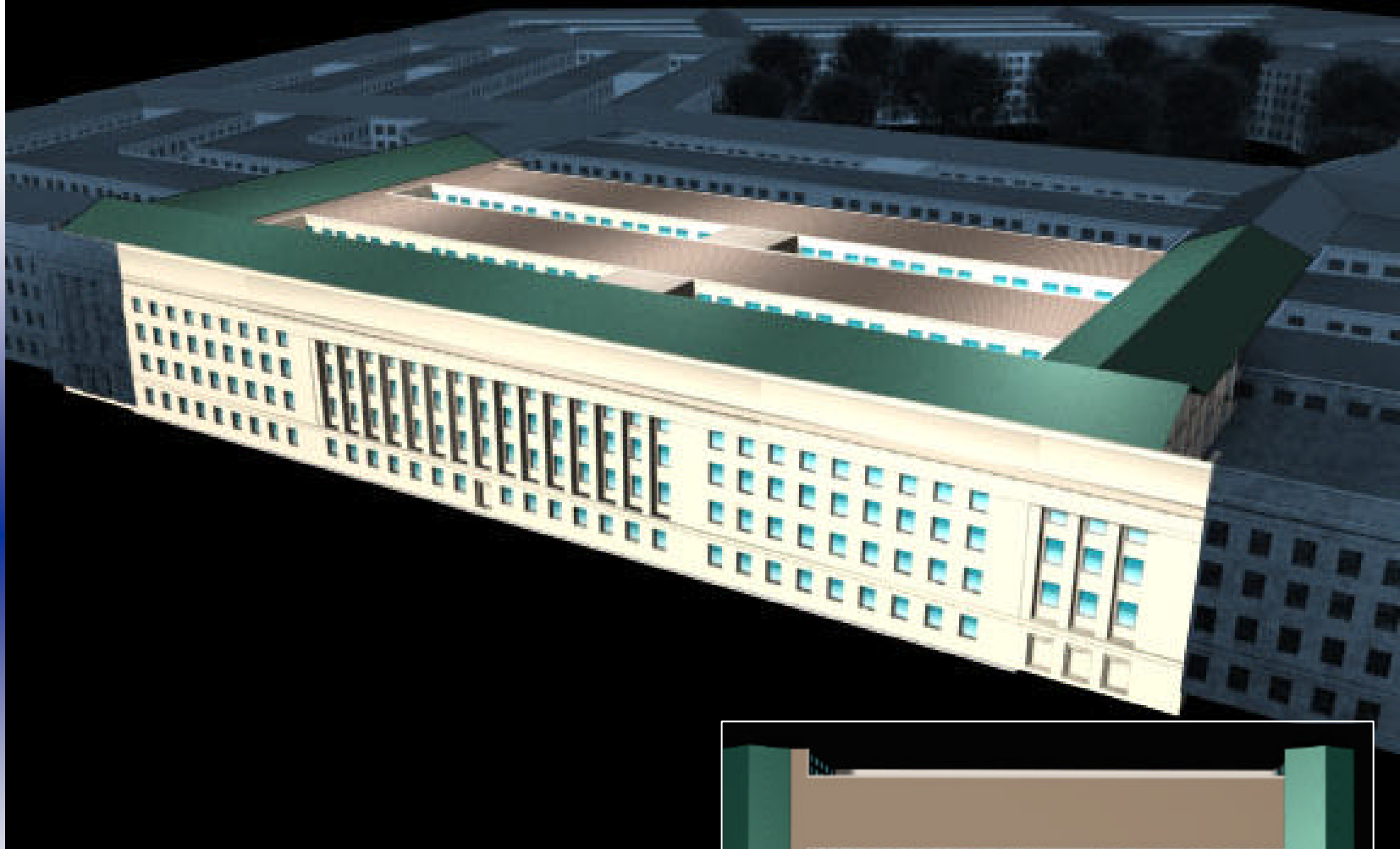


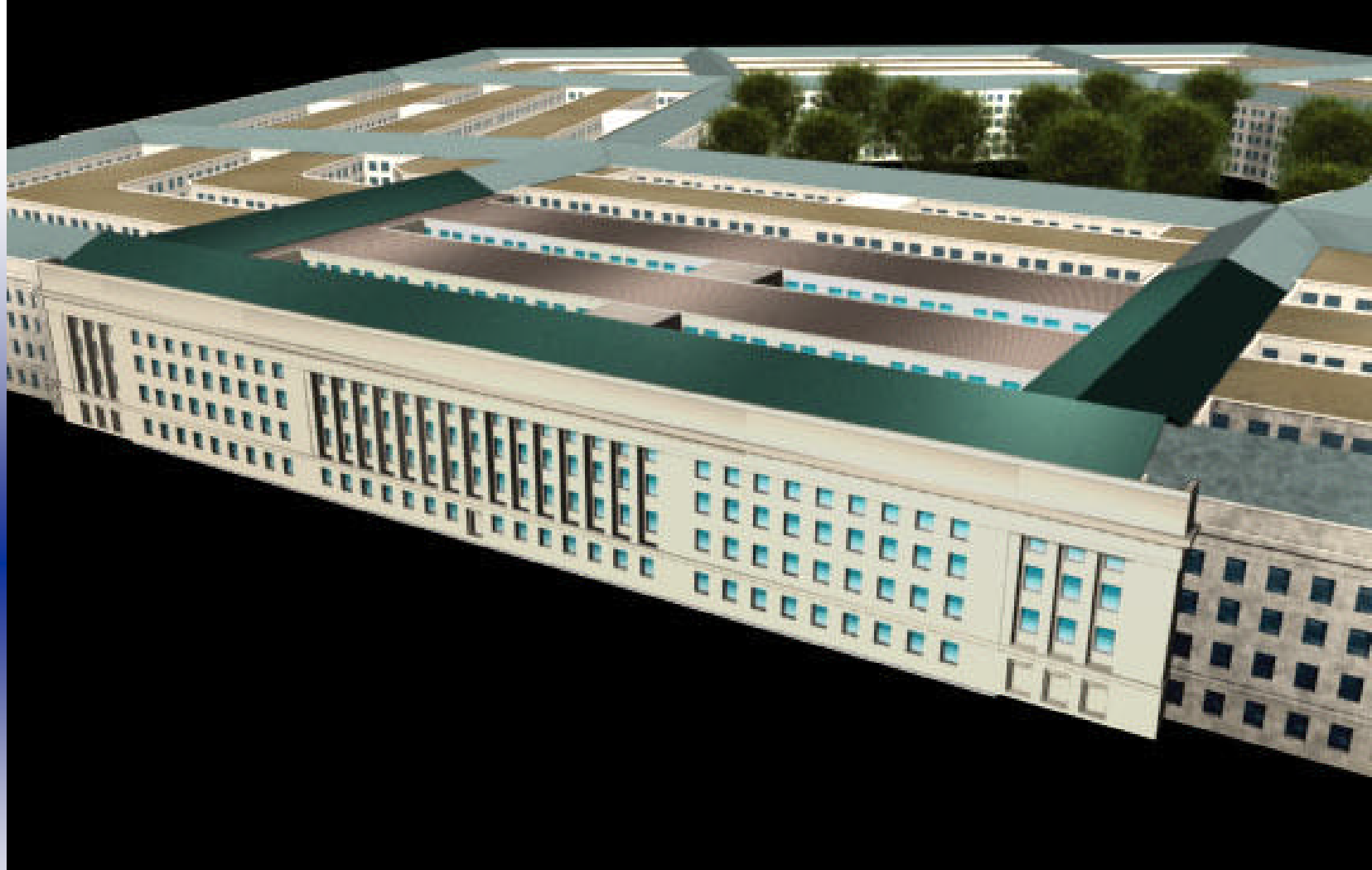
Stabilize
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Stabilize
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Demolish
Rebuild





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Rebuild

**September 11, 2002:
E-ring reoccupied at point of impact.**





From
Renovation
to
Recovery



W1

Hazardous mold growth



From Renovation to Recovery



Mold abatement



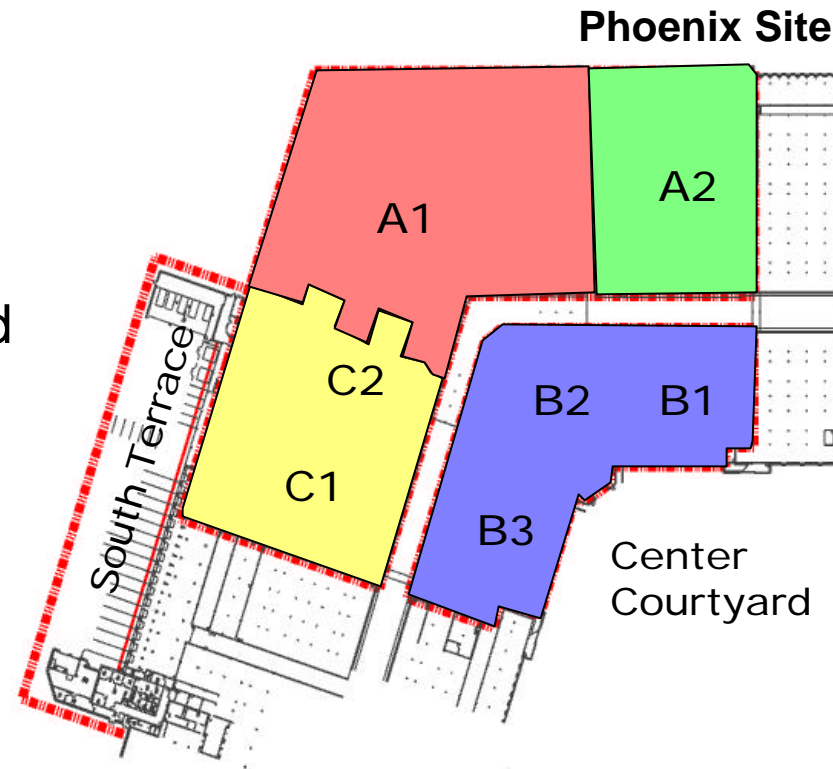
Wedge 1 Move Milestones

Area Projected Move-in

<input type="checkbox"/>	C	OCT 01- MAR 02
<input type="checkbox"/>	B1,2,3	FEB 02 - MAR 02
<input type="checkbox"/>	A1	MAY 02- JUL 02
<input type="checkbox"/>	A2	SEP 02- MAR 03

From
Renovation
to
Recovery

- 1,450 tenants moved in
- 300,000 square feet reoccupied



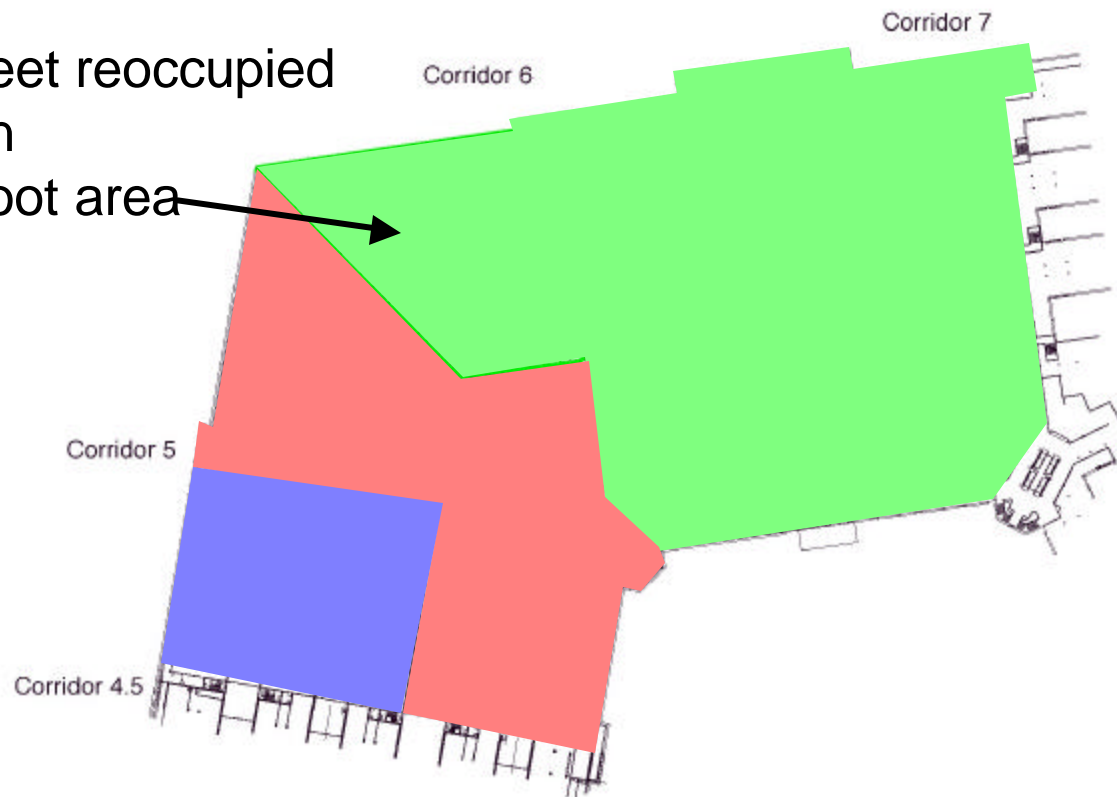


Wedge 2 Move Milestones

Area Projected Move-in

<input type="checkbox"/> Recovery	OCT 01 - MAR 02
<input type="checkbox"/> Renovation	NOV 2003
<input type="checkbox"/> Phoenix	NOV 2003

- 524,000 square feet reoccupied
- Significant work in 120,000-square foot area



Renovation
&
Recovery

W2



Force Protection

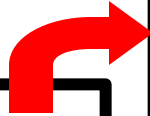
PENTAGON FORCE
PROTECTION PROJECT
ACTION TEAM



- DTRA
- DPS
- JOINT STAFF
- WHS
- BCJOC
- ACOE
- PENREN
- ARLINGTON COUNTY
- INDUSTRY EXPERTS



POC -
PENTAGON
RENOVATION
PROGRAM
(PENREN)



PROTECTION
AGAINST:

- FIRE
- BLAST
- CBR/NBC



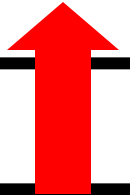
IMPLEMENTERS

- DPS
- WHS
- PENREN



SHORT-
TERM AND
LONG-
TERM
PROJECTS

- EMERGENCY PLANNING
- SECURITY
- UTILITY
- CONSTRUCTION



Security





From
Renovation
to
Recovery



**The new
Wedge 1
Cafeteria
opens
March 11.**

W1



PenRen
Prior to
9/11/01



Remote Delivery Facility

Aug 2001

Phase 1 Complete

Dec 2001

Phase 2 Complete

Mar 2002

Phase 3 Complete



RDF



PenRen
Prior to
9/11/01



Metro Entrance Facility Project
Pentagon Transit Center
Opened Dec. 16, 2001

MEF





Stabilize
Analyze
Demolish
Rebuild





Stabilize
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Demolish
Rebuild



Progress as of March 5, 2002.

A countdown clock tracks the time remaining until September 11, 2002.





Contractor Support

WEDGE 1 & PHOENIX

AMEC
KCE Structural Engineers
Facchina
VIKA Incorporated
RTKL
ECS Ltd.
Syska Hennessey
Stanton Engineering
John J. Kirlin, Inc.
Singleton Electric
ACM Services
HDK
Law
Weidlinger Associates, Inc.
Masonry Arts
Capco
Commercial Hardware
Mufti International
CPF
EDG
Home Engineers, Inc.
Oehrlein & Associates
Weihe Design Group
AMEC Earth & Environmental
Ernest Lee Tile
Roman Mosaic
Morgan Maintenance
CRT
GHT
J.C. Campos Construction
Key Woodworking

WEDGES 2-5

Hensel Phelps Construction Co.
Shalom Baranes, Inc.
HDR, Inc.
Southland Industries
M.C. Dean, Inc.
Air Services, Inc.
Ammon Painting Company
Custom Walls & Windows, Inc.
Dulles Drywall, Inc.
EnviroBate Global, Inc.
LVI Environmental Services, Inc.
CAPCO Contracting Company, Inc.
National Fire Protection, Inc.
Performance Contracting
Studios Architecture

Contractors

W1

W2



Small Business Forum - October 23, 2001



Contractors



W1

W2



- 490 small business representatives attended from 379 different small businesses.
- Exhibitors consisted of 15 prime contractors, 41 first-tier subcontractors, and 4 DoD small business offices and 1 GSA small business office.



Cost of Attack Recovery

Wedge 1, Phoenix & Wedge 2

Recovery
\$

	NTE/Required	Current Estimate	Negotiations Complete
• Construction:	\$520M	\$401M	1/25/02
• Design:	\$50M	\$35M	1/25/02
• IM&T:	\$150M	\$140M	4/01/02
• Security Upgrades:		\$164M	
• Total	\$720M	\$740M	

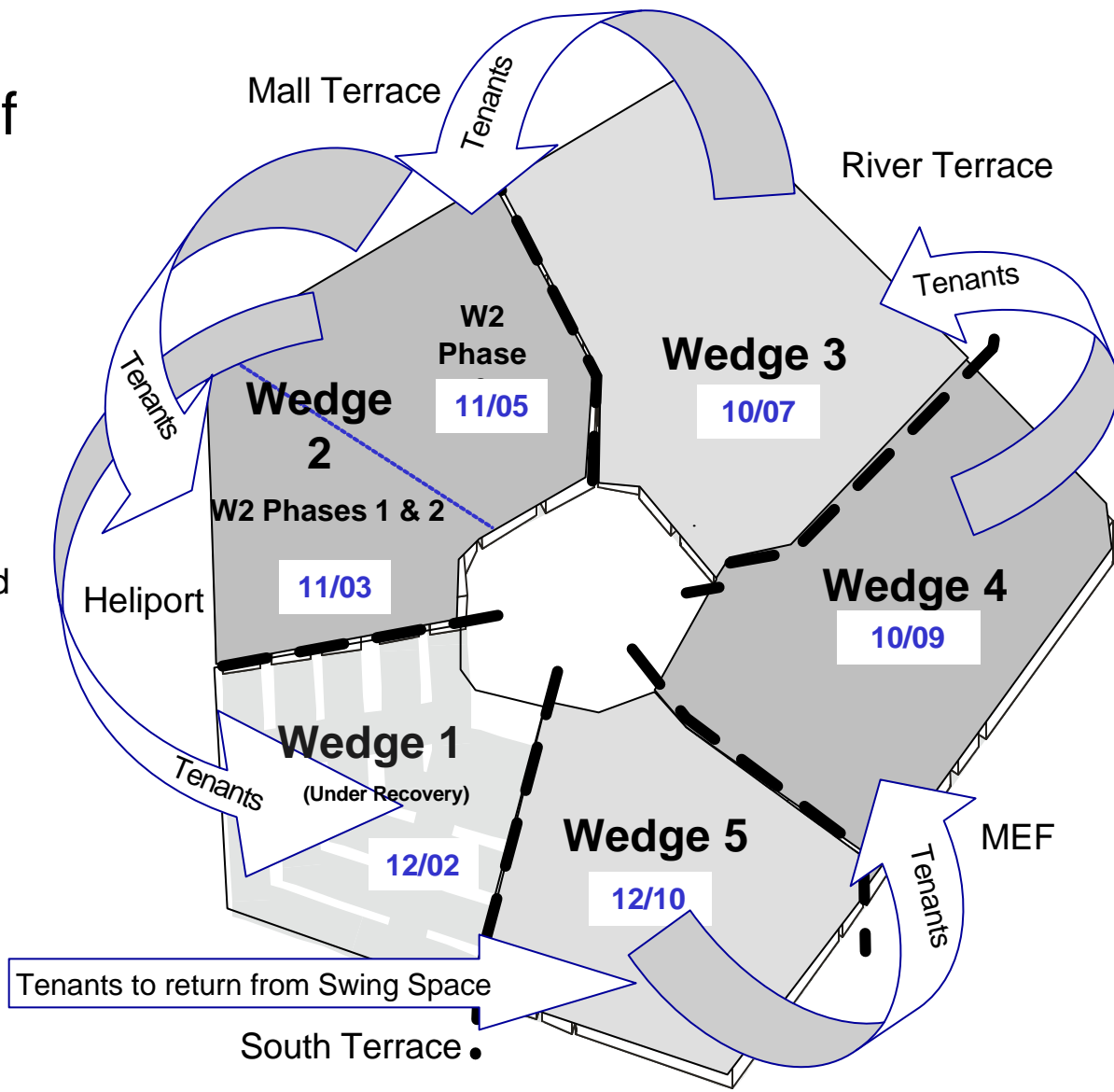


Accelerated Renovation Plan for Completion in 2010

Congressional appropriation of \$300M+ to accelerate the renovation.

2010
Completion

H.R. 3338-71
Sec. 305
"...the amount of 300,000,000 is transferred to the Pentagon Reservation Maintenance Revolving Fund only to finance accelerated building renovation activities...by up to 4 years."




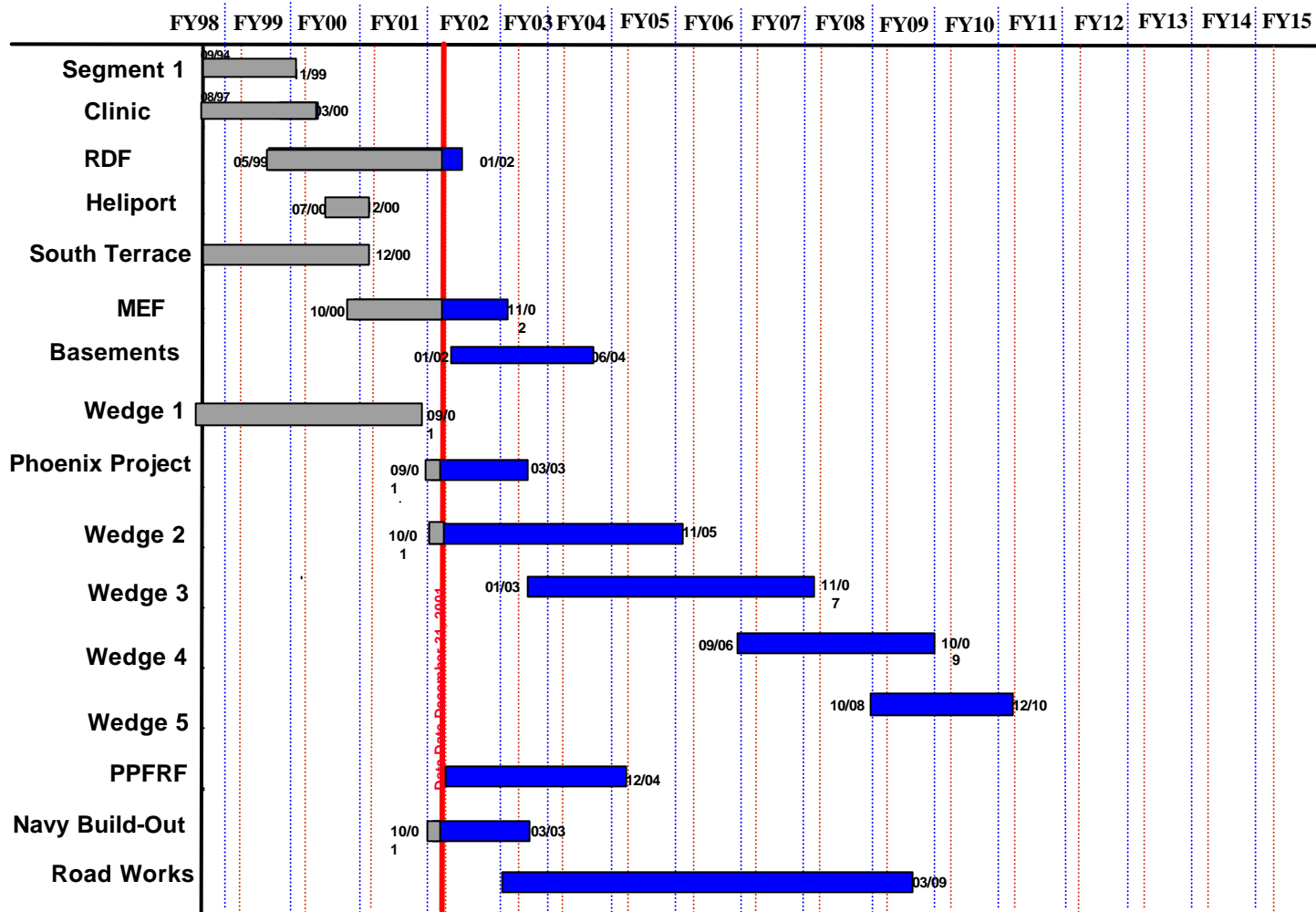


Renovation Schedule

Fiscal Year

LEGEND

	Design/Construction
	Progress to Date





PenRen
on the
Web



<http://renovation.pentagon.mil>